

DIV. OF FISHER

COMMERCIAL FISHERIES REVIEW

Season's Greetings



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COMMERCIAL FISHERIES REVIEW

A review of developments and news of the fishery industries
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CONTENTS

COVER: OLD-FASHIONED SEASON'S GREETINGS TO ALL OUR READERS.

	PAGE		PAGE
FREEZING FISH AT SEA--NEW ENGLAND: PART 7 - PICTORIAL STORY OF OPERATIONS AT SEA AND ASHORE	1		

RESEARCH IN SERVICE LABORATORIES:	13	TRENDS AND DEVELOPMENTS (CONTD.):	
PROGRESS ON PROJECTS, NOVEMBER 1953	13	NORTH PACIFIC EXPLORATORY FISHERY PROGRAM:	
TECHNICAL NOTE NO. 28--POSSIBILITIES FOR THE PRODUCTION OF FISHERY SPECIALTY PRODUCTS IN ALASKA, BY RAYMOND G. LANDGRAF, JR.	18	FALL-WINTER HERRING FISHING POSSIBILITIES IN PRINCE WILLIAM SOUND BEING INVESTIGATED BY JOHN N. COBB (CRUISE 17)	28
TRENDS AND DEVELOPMENTS:	20	U. S. FOREIGN TRADE IN EDIBLE FISHERY PRODUCTS, AUGUST 1953	28
ADDITIONS TO THE U. S. FLEET OF FISHING VESSELS	20	WHOLESALE PRICES, OCTOBER 1953	29
CALIFORNIA:		FOREIGN:	31
AGE COMPOSITION OF 1952 ANCHOVY CATCH .	20	INTERNATIONAL:	
YOUNG SARDINES FROM 1953 SPAWNING ASSESSED BY YELLOWFIN (CRUISES 53-Y-8 AND 53-Y-9)	20	FOOD AND AGRICULTURE ORGANIZATION:	
YELLOWTAIL TAGGING CONTINUED BY N. B. SCOFIELD (CRUISE 53-S-5)	22	INTERNATIONAL FISHING BOAT CONGRESS ATTRACTS KEEN INTEREST	31
CONNECTICUT:		UNITED NATIONS KOREAN REHABILITATION ADMINISTRATION:	
CONNECTICUT RIVER SHAD CATCH, 1953	22	FISHING VESSEL PURCHASE PROGRAM	31
OYSTER PRODUCTION, 1952	23	INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA:	
FEDERAL PURCHASES OF FISHERY PRODUCTS ..	23	FORTY-FIRST STATUTORY MEETING AT COPENHAGEN	31
FUR-SEAL SKIN PRICES LOWER AT FALL AUCTION	23	WHALING:	
GULF EXPLORATORY FISHERY PROGRAM:		1953/54 ANTARCTIC SEASON	32
OREGON DRAGS AT 830-FATHOM DEPTH	24	INTERNATIONAL PACIFIC HALIBUT COMMISSION:	
GULF STATES MARINE FISHERIES COMMISSION: SHRIMP MAIN TOPIC AT TAMPA MEETING	24	NEW CONVENTION TAKES EFFECT	33
JAPANESE TUNA MOTHERSHIP FREIGHTS FROZEN TUNA TO U. S.	25	ANGOLA:	
MARYLAND:		TUNA CANNING	34
OYSTER SURVEY	26	BAHAMA ISLANDS:	
NEW ENGLAND TUNA EXPLORATIONS:		STATUS OF THE FISHERIES	34
FINAL CRUISE OF MARJORIE PARKER (CRUISE 4)	27	BRAZIL:	
NORTH ATLANTIC FISHERY INVESTIGATIONS: ZERO-AGE HADDOCK FOUND TO BE SCARCE OFF NEW ENGLAND BY ALBATROSS III (CRUISE 55)	28	SHRIMP FISHERY EXPANSION POSSIBLE	36
		CANADA:	
		BRITISH COLUMBIA SALMON EXPORT REGULATIONS	36

CONTENTS CONTINUED PAGE 61

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FREEZING FISH AT SEA--NEW ENGLAND

Part 7 - Pictorial Story of Operations at Sea and Ashore

Freezing fish at sea immediately after catching appears to offer the best prospects for maintaining uniform quality during extended trawler voyages required by an apparent scarcity of certain species of fish and the greater time required to obtain payloads. Upon being landed at port, these fish could be immediately thawed, filleted, and the fillets refrozen, or they could be held in frozen storage ashore for later processing.



THE EXPERIMENTAL FREEZING VESSEL DELAWARE EN ROUTE TO THE FISHING GROUNDS.

The U. S. Fish and Wildlife Service's Branch of Commercial Fisheries for the past five years has been investigating the practicability of such means of handling fish. Though these studies have been part of a refrigeration research program conducted at the various technological laboratories of the Service, the greater part of the work has been carried out at the laboratory located in Boston, Massachusetts. On the basis of preliminary experiments, the method of freezing decided upon for intensive study was that of immersion of the round (ungutted) fish in refrigerated sodium-chloride brine. On this basis, the trawler Delaware, formerly of the New England commercial fishing fleet and now in use by the Boston laboratory, has been outfitted with a brine freezer for freezing the fish at sea and, in addition, refrigerated holds for storing the frozen fish until the vessel arrives at port. A refrigeration plant of the absorption type supplies the refrigeration on the vessel.

Immersion of the frozen fish in circulating water appears to be the best method of thawing. All freezing and thawing methods are being evaluated on the basis of chemical, physical, and organoleptic tests.

NOTE: PREPARED BY THE TECHNICAL STAFF, FISHERY TECHNOLOGICAL LABORATORY, BRANCH OF COMMERCIAL FISHERIES, U. S. FISH AND WILDLIFE SERVICE, BOSTON, MASSACHUSETTS.

OFF TO SEA ON A TEST CRUISE



Casting off bow line. The Delaware departs on a test cruise from the North Atlantic Technological Research Station in Boston, Mass.



Starboard side view of vessel en route to sea. The Delaware has an over-all length of 148 feet; beam, 25 feet; and depth, 14 feet 8 inches.



The trawl is secured to the rail of the vessel en route to sea. A duplicate trawl is carried on the opposite side of the vessel. Fishing may be done from either side.

OPERATING THE TRAWL



In setting the trawl, the cod end is the first part of the trawl to be hoisted over the side.



The wings of the trawl, which spread out to act as a "funnel" for guiding the fish into the cod end, are put overboard next.



The trawl is now in the water and sinking. Floats keep the upper part of the trawl from closing while fishing.



The vessel drifts away from the trawl.

The vessel, under way, circles away from the trawl to avoid entanglement.



OPERATING THE TRAWL (CONTINUED)

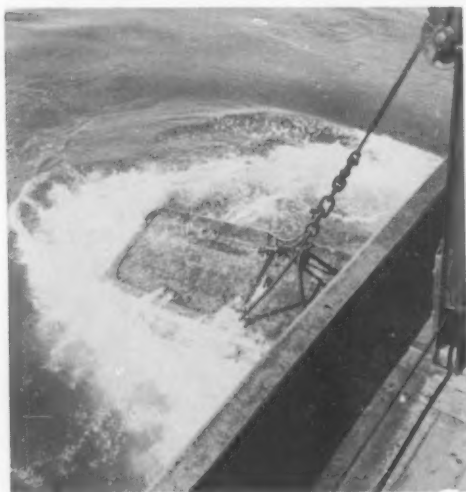


Forward trawl door ready to be dropped over the side. The after door follows immediately. The doors, set at opposite angles, serve to hold the sides of the net open when towed along the ocean bottom.



The two lines that tow the trawl are brought together in the towing block near the stern of the vessel, and the vessel now begins the tow. Towing time depends upon the abundance of fish and type of bottom. Time varies from 20 to 90 minutes.

HAULING IN THE CATCH

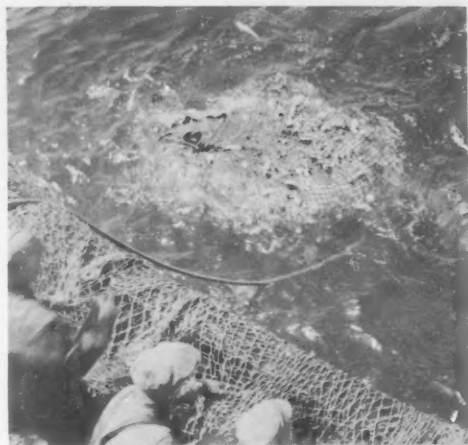


One of the doors "boils" to the surface as the net is being pulled back.



The net float line is being brought to the rail. The wings of the net are then hauled aboard the vessel.

HAULING IN THE CATCH (CONTINUED)



The cod end of the net, holding a good catch of fish, floats to the surface.



Myriads of gulls participate in the harvest of fish. Sharks are also usually present to get their share of the catch.



The cod end or bag of fish is hoisted aboard. A fisherman releases drawstring at bottom of bag to discharge fish on deck.



Cod end has been emptied and trawl is again put overboard for another tow.

HANDLING FISH ABOARD THE VESSEL

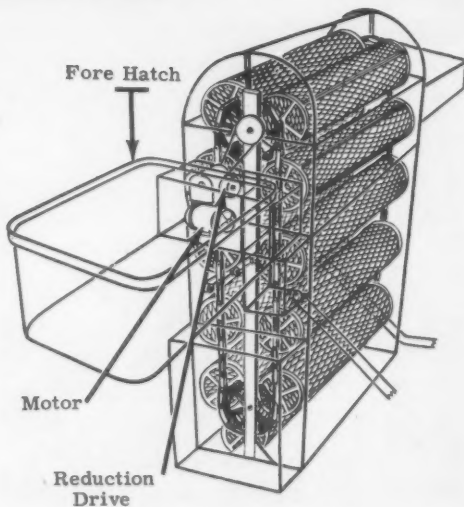


Close-up of a fine catch of scrod and haddock. Fish are held in "checkers" or bins on deck.

The brine freezer, located between the mid and aft hatches, is near the fish in the checkers and may be loaded from either side.



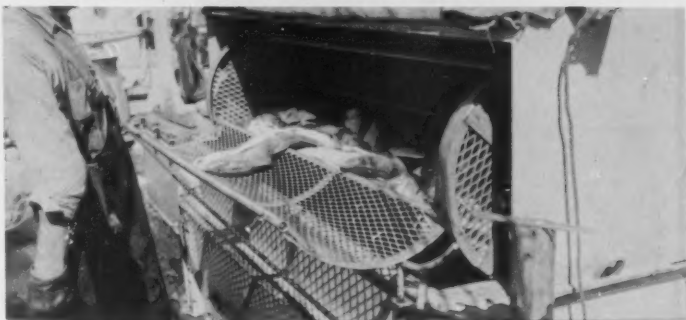
Fish, sorted by size and species, are transferred by baskets to the freezer. Some of the fish are eviscerated and iced for comparison with fish from the same catch frozen at sea.



Eleven expanded-metal, cylindrical baskets hold the fish for freezing. The baskets are conveyed through refrigerated, circulating brine.

HANDLING FISH ABOARD THE VESSEL (CONTINUED)

Doors on the freezer baskets permit easy loading and unloading at deck level. Each basket holds about 400 pounds of round (ungutted) fish.



After the fish have been placed in the freezer basket, the entire mechanism rotates periodically immersing the fish in the refrigerated brine. Indicator dials on the end of the freezer cover show when each basket is ready for unloading.



After the fish are frozen, they are unloaded from the baskets then conveyed by chute into the hold.



The frozen-fish hold, refrigerated by coils through which cold liquid is circulated, is maintained between 0 and 10° F.

HANDLING FISH ASHORE



The Delaware arrives at the Boston Fish Pier to unload part of the catch.



A precedent is established when the Delaware discharges first commercial quantities of round frozen fish at the Boston Fish Pier.



Frozen fish are unloaded into large boxes for holding in commercial frozen storage.



Round frozen fish may be stored for a limited time in commercial cold storage until a backlog of raw material is on hand for efficient processing-plant operation.

TRANSPORTING FISH TO LABORATORY



The Delaware returns to the pier at the laboratory to unload fish for experimental work.



The fish are hauled by truck from the laboratory pier to the shore cold storage and pilot plant for further studies.

PILOT PLANT OPERATION IN LABORATORY

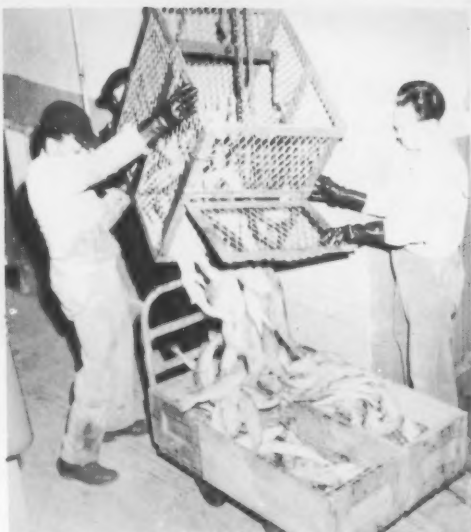
Round frozen fish are dumped into thawing tank. Circulating water at 60° F. is recommended for thawing. Reasonably tight boxes and hogsheads may also be used in place of large thawing tank.



PILOT PLANT OPERATION IN LABORATORY (CONTINUED)



Defrosted round fish are hoisted from the thawing tank in perforated metal baskets for delivery to scaler and filleting line.



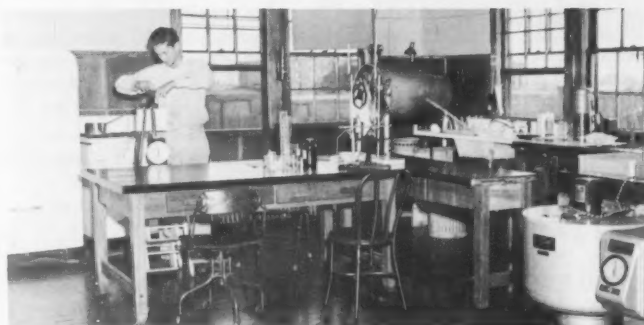
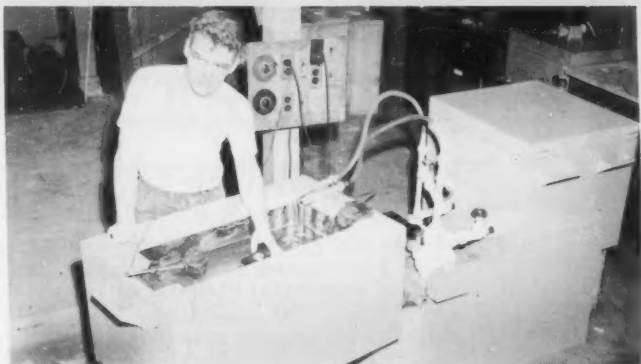
Fish are discharged through door in side of baskets.



Filleting round thawed fish. Note plumpness of fish. No new problems are posed in filleting, packaging, and freezing of fillets from round brine-frozen water-thawed fish. The yield of fillets obtained from round brine-frozen fish is at least as high as that from control lots of iced dressed fish.

CHEMICAL AND ACCEPTABILITY TESTS

Small-scale freezing tests of fish in brine solution of various compositions and at different temperatures are conducted to determine effect on quality of the fish.



Chemical, physical, and palatability tests are conducted in the laboratory at time fish are landed by the Delaware and at intervals after holding the fish in frozen storage.



Laboratory tests are made on samples of fillets from brine-frozen round fish and from iced-dressed fish to determine comparative quality.



A taste panel composed of industry members determines quality of fillets prepared from round brine-frozen fish and from iced-dressed fish. Large-scale consumer tests of the fillets with families in the Boston area are also being conducted.

Further information regarding the freezing of fish at sea and the processing of the fish in shore plants may be obtained from the Fishery Technological Laboratory, U. S. Fish and Wildlife Service, 61 Sumner Street, East Boston 28, Massachusetts.

Reprints of the following publications are available without charge, upon request:

Freezing Fish at Sea--New England

- Part 1 - Preliminary Experiments, by Jean C. Hartshorne and Joseph F. Puncochar, Commercial Fisheries Review, vol. 14, no. 2, pp. 1-7, Feb. 1952 (Sep. 306).
- Part 2 - Experimental Procedures and Equipment, by H. W. Magnusson, S. R. Pottinger, and J. C. Hartshorne, Commercial Fisheries Review, vol. 14, no. 2, pp. 8-15, Feb. 1952 (Sep. 306).
- Part 3 - The Experimental Trawler "Delaware" and Shore Facilities, by C. Butler, J. F. Puncochar, and B. O. Knake, Commercial Fisheries Review, vol. 14, no. 2, pp. 16-25, Feb. 1952 (Sep. 306).
- Part 4 - Commercial Processing of Brine-Frozen Fish, by C. Butler and H. W. Magnusson, Commercial Fisheries Review, vol. 14, no. 2, pp. 26-29, Feb. 1952 (Sep. 306).
- Part 5 - Freezing and Thawing Studies and Suggestions for Commercial Equipment, by H. W. Magnusson and J. C. Hartshorne, Commercial Fisheries Review, vol. 14, no. 12a, pp. 8-23, Dec. 1952 - Supplement (Sep. 328).
- Part 6 - Changes and Additions to Experimental Equipment on the Trawler "Delaware", by C. G. P. Oldershaw, Commercial Fisheries Review, vol. 15, no. 3, pp. 25-28, Mar. 1953 (Sep. 345).

Fish Frozen in Brine at Sea: Preliminary Laboratory and Taste-Panel Tests, Technical Note No. 22, by S. R. Pottinger, J. Holston, and G. McCormack, Commercial Fisheries Review, vol. 14, no. 7, pp. 20-23, July 1952 (Sep. 318).

A New Liquid Medium for Freezing Round Fish, Technical Note No. 22, by J. A. Holston, Commercial Fisheries Review, vol. 14, no. 12a, pp. 36-40, Dec. 1952 - Supplement (Sep. 331).

A Portable Immersion Freezer, Technical Note No. 24, by C. G. P. Oldershaw, J. A. Holston, and S. R. Pottinger, Commercial Fisheries Review, vol. 15, no. 2, pp. 32-34, Feb. 1953 (Sep. 342).





Progress on Projects, November 1953

DEVELOPMENT OF A DRIED PRODUCT FROM CONDENSED MENHADEN SOLUBLES OR STICKWATER: Proximate composition and analyses for physical and chemical characteristics were made on menhaden solubles from various plants throughout the Atlantic and Gulf areas. These tests were made to obtain detailed information on the physical and chemical properties of menhaden solubles which would lead to a better understanding of the problems involved in the preparation of a dry material and to the development of methods for the retardation or elimination of hygroscopicity of the finished product. The results to date on the analyses of different menhaden solubles samples are as follows:

Characteristics of Menhaden Solubles					
Determination	Number of Samples	Average Value	Median Value	Minimum	Maximum
pH ^a /	33	4.86	4.82	3.24	6.13
Refractive Index ^b /	33	1.4212	1.4220	1.4018	1.4322
Specific Gravity	28	1.195	1.190	1.144	1.262
Viscosity (MacMichael ^c /)	33	217	78	13	3000
Protein (N x 6.25)--percent ..	23	33.2	32.7	30.8	38.0
Fat (ether extraction)--percent	18	6.89	7.60	1.53	11.50
Dry Solids--percent	29	48.4	48.8	43.2	53.3
Water Insoluble matter--percent	23	4.65	4.10	2.95	9.22
Ash--percent	32	9.24	9.31	5.47	13.07
Water-Insoluble Ash--percent.	23	0.31	0.25	0.06	1.04

^a/SOME OF THE SAMPLES WITH HIGH pH VALUES DID NOT CONTAIN ADDED ACID.

^b/THESE VALUES ARE INCLUDED SINCE MANY PLANTS USE THE HAND REFRACTOMETER TO DETERMINE THE SOLIDS CONTENT. IN A MAJORITY OF THE SAMPLES THE NATURE OF THE RAW MATERIAL DID NOT PERMIT A SHARP LINE READING, THEREFORE THE VALUES MAY BE CONSIDERED AS APPROXIMATE.

^c/DETERMINED WITH A MACMICHAEL VISCOSIMETER WHICH MEASURES THE TWIST GIVEN A BRONZE WIRE BY THE MATERIAL IN A ROTATING CUP. THE LARGE RANGE IN VISCOSITY REQUIRED THE USE OF SEVERAL WIRES, BUT COMPARABLE VALUES WERE OBTAINED BY USE OF CONVERSION FACTORS.

(College Park)

CHEMICAL AND PHYSICAL PROPERTIES OF FISH AND SHELLFISH PROTEINS:

The current phase of this project deals with the study of the nature and control of drip in thawed frozen fish. Preliminary data were obtained with frozen rockfish to obtain a comparison of the amount of drip produced from frozen rockfish fillets when cooked (1) after thawing and (2) in the frozen state. The tests were made during periodic intervals of storage of the frozen fillets so as to observe the effect of storage conditions on the drip formation. It was found for frozen rockfish fillets that the loss of weight in the form of drip was much less for those fillets cooked (baked) while frozen than for those fillets cooked after thawing. Periodic examinations showed that storage of the frozen fillets produced progressively greater amounts of drip when the fillets were thawed prior to cooking, but resulted in a slight decrease in the amount of drip when the fillets were cooked while frozen.

In order to determine whether these observations apply to other frozen fish, two additional series were initiated using frozen silver salmon and halibut fillets. The results to date are as follows:

Samples of Fillets		Loss in Weight			
Species of fish	Condition and treatment ^{a/}	As drip formed during thawing	Evaporation during cooking	As drip formed during cooking	Total
		Percent	Percent	Percent	Percent
Silver salmon	Fresh (not frozen)	-	10.2	5.9	16.1
	Frozen & stored for 3 days at 0°F, then thawed & cooked.	0.5	7.0	6.3	13.8
	Frozen & stored for 3 days at 0°F, then cooked while frozen	-	5.0	7.7	12.7
Halibut	Fresh (not frozen)	-	11.2	13.3	24.5
	Frozen & stored for 3 days at 0°F, then thawed & cooked	8.1	7.6	10.9	26.6
	Frozen & stored for 3 days at 0°F, then cooked while frozen	-	4.0	11.6	15.6

^{a/}FOR THE COOKING TESTS, THE SAMPLES WERE BAKED AT 350° F. FOR 23 MINUTES FOR THE FRESH (NOT FROZEN) FILLETS AND FOR 33 MINUTES FOR THE FROZEN FILLETS.

(Seattle)

COMPOSITION OF FISH: The proximate composition of individual samples of sheepshead (*Aplodinotus grunniens*) caught in the Mississippi River near Clinton, Iowa, was determined. The data are of samples of fish taken in the same area during May and August 1953. The purpose of this phase of the project is to determine the variation in composition of certain fish during different seasons of the year. The results are shown in tables 1 and 2.

Table 1 - Composition of Sheepshead Caught in the Mississippi River near Clinton, Iowa, in May 1953

Sample Number	Length	Weight	Proximate Composition of Edible Portion			
			Moisture	Fat	Protein	Ash
	Cm.	Grams	Percent	Percent	Percent	Percent
1	31.5	395	76.0	4.75	18.1	1.15
2	29.5	325	75.4	5.36	18.1	1.15
4	27.5	255	79.4	1.45	17.9	1.12
5	33.0	420	72.5	7.08	16.9	1.12
6	31.5	435	73.6	7.30	17.6	1.36
7	33.0	425	74.8	8.58	17.1	1.00
8	32.0	425	79.9	1.78	16.8	1.12
9	32.0	490	70.0	13.0	16.5	1.03
10	33.0	515	74.9	9.20	17.7	1.01
11	33.5	490	72.0	13.5	17.5	1.00
12	33.0	525	69.4	14.2	16.4	1.08
13	33.0	485	74.7	7.40	17.8	1.12
14	35.5	660	73.3	9.00	17.3	1.05
15	34.0	575	71.1	11.7	17.2	1.00
16	38.0	765	71.4	11.6	17.4	1.06
AVERAGE	30.7	479	73.9	8.39	17.4	1.09

NOTE: RESULTS OF THE FIRST SIX SAMPLES OF SHEEPSHEAD CAUGHT IN MAY WERE PREVIOUSLY REPORTED IN THE OCTOBER 1953 ISSUE OF COMMERCIAL FISHERIES REVIEW, BUT ARE REPEATED IN THIS TABLE WITH THE REMAINDER OF THE SERIES SO THAT THE RESULTS OF THE TWO COMPLETE LOTS TAKEN IN MAY AND AUGUST MAY BE COMPARED.

The individual fish taken in August were considerably larger than those taken in May. Average weight of fish taken in August was 811 grams; in May, 479 grams. The average fat content of the August samples was 7.34 percent as compared to 8.39 percent for the fish taken in May. There was no significant seasonal variation in the moisture, protein, and ash contents.

Table 2 - Composition of Sheepshead Caught in the Mississippi River near Clinton, Iowa, in August 1953

Sample Number	Length	Weight	Proximate Composition of Edible Portion			
			Moisture	Fat	Protein	Ash
	Cm.	Grams	Percent	Percent	Percent	Percent
1	26.0	210	75.2	4.35	15.9	1.17
2	27.5	250	76.9	2.37	19.9	1.27
3	30.0	360	78.0	1.52	19.3	1.11
4	32.5	495	76.5	8.31	19.0	1.12
5	32.0	490	74.1	8.32	17.8	1.04
6	37.0	760	72.8	9.11	17.8	1.03
7	36.5	790	76.6	6.05	14.8	1.00
8	37.0	790	74.9	6.73	16.9	1.00
9	40.0	1,075	70.7	11.1	17.9	0.97
10	40.0	1,000	76.4	6.48	16.7	0.94
11	41.0	1,015	74.5	9.55	16.9	0.96
12	41.0	1,055	72.2	11.3	16.7	0.92
13	41.0	975	73.0	8.18	18.2	1.15
14	40.5	1,080	70.8	10.20	18.1	0.98
15	44.0	1,280	76.2	6.43	17.6	1.01
16	43.0	1,345	73.7	7.40	18.8	1.05
AVERAGE	36.8	811	74.5	7.34	17.7	1.04

(Seattle)

FREEZING FISH AT SEA--NEW ENGLAND: A fire of unknown origin destroyed the after quarters and galley of the Service's research trawler Delaware. The vessel had just returned from another successful trip (Cruise 25) to obtain a large lot of haddock for byproducts studies and to obtain, for storage tests, various commercial species of fish other than cod and haddock previously tested. The Delaware returned to the laboratory dock in Lockwood Basin, East Boston, on October 22 with 22,500 pounds of brine-frozen fish and 3,000 pounds of iced fish. Much of the frozen fish was salvaged, but none can be used for test purposes. Plans are being made to repair the Delaware; however, it is not possible to predict at this time the extent of the vessel's operations during the remainder of this fiscal year.

On this last cruise the vessel was at sea for nine days. Fishing was conducted mostly in the Georges Bank area. The refrigeration equipment performed satisfactorily throughout the trip.

The brine-frozen fish consisted of 3,500 pounds of haddock; 10,000 pounds of scrod haddock; 2,000 pounds of pollock; 2,000 pounds of whiting; and 5,000 pounds of ocean perch. The lot of iced, gutted fish was composed entirely of haddock.

(Boston)

CORRECTION

COLD STORAGE LIFE OF FROZEN SILVER AND KING SALMON: In the August issue of Commercial Fisheries Review, pp. 20-21, the results from the periodic examination of the frozen silver and king salmon stored for 9 months at 0° F. were incorrectly reported.

The corrected results follow:

Results of Storage Tests on Frozen Silver and King Salmon

Series Number	Species of Salmon	Description of Dressed Fish Used to Produce Steaks	Storage period of the samples			Quality of Salmon Steaks After Total Storage Period
			Dressed Fish Prior to Steaking	Steaks Prepared from the Dressed Fish	Total (dressed fish and corresponding steaks)	
			Months	Months	Months	
I	Silver	Fish from Neah Bay, Wash. -- dressed, frozen, and stored at 0°F.	0	0	0	Good to excellent.
				3	3	Good, but belly tips were slightly rancid.
				6	6	Fair; color moderately faded; belly tips and dark meat rancid; flat to off-flavor.
				9	9	Poor; color moderately faded; belly tips and dark meat very rancid; off-flavor.
			3	0	3	Good, but belly tips were slightly rancid.
				3	6	Fair; color faded slightly; belly tips and dark meat rancid; flat to off-flavor.
				6	9	Fair to poor; color slightly faded; belly tips rancid; dark meat slightly rancid; off-flavor.
			6	0	6	Good, but belly tips were slightly rancid.
				3	9	Fair; color slightly faded; belly tips rancid; dark meat slightly rancid; off-flavor.
			9	0	9	Good, but belly tips were slightly rancid.
II	Silver	Fish from Lapush, Wash. -- Dressed, frozen, and stored at 0°F.	0	0	0	Good to excellent.
				3	3	Good, but belly tips were slightly rancid.
				6	6	Fair; color slightly faded; belly tips and dark meat were rancid; flat to off-flavor.
				9	9	Unacceptable; color faded badly; belly tips and dark meat were very rancid; off-flavor.
			3	0	3	Good, but belly tips were slightly rancid.
				3	6	Fair; color slightly faded; belly tips and dark meat were rancid; flat to off-flavor.
				6	9	Poor; color faded to pale; belly tips and dark meat were rancid; off-flavor.
			6	0	6	Good, but belly tips were slightly rancid.
				3	9	Fair to poor; rancid belly tips; off-flavor.
			9	0	9	Good, but belly tips were slightly rancid.

Results of Storage Tests on Frozen Silver and King Salmon (Continued)

Series Number	Species of Salmon	Description of Dressed Fish Used to Produce Steaks	Storage period of the samples			Quality of Salmon Steaks After Total Storage Period
			Dressed Fish Prior to Steaking	Steaks Prepared from the Dressed Fish	Total (dressed fish and corresponding steaks)	
III	Chinook	Fish from Illwaco, Wash. -- Dressed, frozen, and stored at 0°F.	Months	Months	Months	
			0	0	0	Good to excellent, but texture somewhat soft.
				3	3	Good, but texture was somewhat soft and belly tips were slightly rancid.
				6	6	Fair; color slightly faded; belly tips and dark meat were rancid; flat to off-flavor.
				9	9	Poor to unacceptable; color faded considerably; belly tips and dark meat were very rancid; off-flavor.
			3	0	3	Good, but texture somewhat soft.
				3	6	Fair to good; color slightly faded; belly tips slightly rancid; slight loss of flavor.
				6	9	Fair; color slightly faded; belly tips were rancid; dark meat showed trace of rancidity; off-flavor.
			6	0	6	Good, but belly tips were slightly rancid.
				3	9	Fair; color slightly faded; belly tips were rancid; dark meat showed trace of rancidity; off-flavor.
			9	0	9	Good, but belly tips were slightly rancid.

(Seattle)



DO YOU KNOW:

That potential sales for a new cat food consisting of whole fish are great since in the United States only 8 percent of the owners of 28 million cats now buy a prepared food.

--Weekly Digest, November 28, 1953
(The American Institute of Food Distribution, Inc.)

TECHNICAL NOTE NO. 28--POSSIBILITIES FOR THE PRODUCTION OF FISHERY SPECIALTY PRODUCTS IN ALASKA

In Alaska there is a well-recognized need for off-season industry to supply work for residents either before or after the short salmon-canning season. The production of various fishery specialty products would be one way of attaining year-round work for some Alaskans.

By specialty products we normally mean those products which are produced for limited or special markets. A broader and perhaps truer definition today would be any distinctive fishery product, either canned (heat-processed), pickled, smoked, or frozen, that requires more than the minimum amount of effort in its preparation and packaging. For the purpose of this discussion we will consider as staples fresh fish in general, canned fish (such as salmon and tuna), and frozen fish or fish fillets. Specialties are such products as smoked, breaded, and pickled fish and shellfish; also various fish pastes and spreads.

There are three general classifications of specialty products: (1) Low-priced large-volume products; (2) medium-priced large- or medium-volume products; and (3) high-priced limited-volume products. These products, depending upon their classification, have found markets for various reasons, the main one being that people like variety in their diets. Although markets are limited within Alaska because of the relatively small population, the current increasing population will tend to expand the markets for specialty products within the Territory. Volume production of many specialty products is contingent on promotion of increased consumption and the development of new market outlets.

Alaska is capable of producing a variety of specialty fish products. Certainly the availability of the raw materials is no problem. At various periods during the year commercial quantities of butter clams, herring, cod, sablefish, shrimp, crab, and many varieties of bottom and flat fish are available. At present many of these species are not even being fully utilized for food purposes. This does not take into consideration the tremendous quantities of edible trimmings discarded each year by the salmon canneries and the lower-priced salmon as sources of raw material for the preparation of specialty products. The remaining question is, "What types of specialty products could be produced by small concerns in Alaska?"

The technological problems involved in the preparation of fishery specialty products are concerned primarily with the procurement and handling of the raw material and the development of processing recommendations. The construction of a controlled tunnel-type smokehouse and a study of smoking procedures have been an important part of the developmental work at the Fishery Products Laboratory, Ketchikan, Alaska. Heat-processing recommendations were determined for each product, using copper-constantin thermocouples and a recording potentiometer and standard methods of calculation. Laboratory taste panels evaluated the appetite appeal, and storage tests were conducted to determine the keeping quality of each product. The methods developed are suitable for application under the conditions of small plants in Alaska which do not have capital for the purchase of expensive equipment or the employment of technically trained personnel. Work has been completed on the preparation of the following products: kelp sea pickles and relish, smoked salmon caviar spreads, smoked chum salmon spread, canned smoked salmon, canned smoked clams, canned smoked shrimp, and various smoked products from Alaska herring. All of these products were tested by the Laboratory's taste panel and were found to be very acceptable.

The products mentioned are just a few of those which could be produced from the fishery resources of Alaska. The main problems facing potential producers in Alaska are the high costs of labor, material, and transportation to volume markets. However, small-scale industry, even family-size industry, should be able to produce profitably many of the products mentioned.

Perhaps the best method of marketing any specialty sea-food product from Alaska would be in gift packages. The idea has proven to be very profitable to the fruit industry, where the gift package first grew into a large-sized industry. At present many other food industries have gone into the gift-package business, marketing their specialized packs at a better-than-average price. This would be the ideal way to market Alaska products such as canned smoked salmon, smoked fish spreads, kelp pickles, and relish. Fancy packs in colorful containers, attractively packaged, would sell for premium prices. The amount of tourist trade to Alaska, which grows each year, is a measure of the interest shown by people of the United States in the Territory. The name Alaska on a gift package would attract many consumers from all the States.

It is felt that there is always a market for a high-quality product which is good-tasting, a little out of the ordinary, and attractively packaged. The work on this project has shown that such products could be produced from readily available fishery resources in Alaska.

--Raymond G. Landgraf, Jr.
Fishery Products Laboratory
Ketchikan, Alaska

NOTE: THE FISHERY PRODUCTS LABORATORY RECENTLY ISSUED TECHNICAL REPORT NO. 6 "SPECIALTY FOOD PRODUCTS FROM ALASKA HERRING," BY R. G. LANDGRAF, JR. AND H. J. CRAVEN, FISHERIES EXPERIMENTAL COMMISSION OF ALASKA, KETCHIKAN. ADDITIONAL REPORTS ON OTHER PHASES OF THE PROJECT ON THE DEVELOPMENT OF SPECIALTY FOOD PRODUCTS FROM ALASKAN FISH ARE IN PREPARATION AND WILL BE ANNOUNCED IN COMMERCIAL FISHERIES REVIEW WHEN READY FOR ISSUE. IN THE MEANTIME, INFORMATION OR PREPARATION OF SPECIFIC SPECIALTY FISH PRODUCTS MAY BE OBTAINED BY WRITING TO THE FISHERY PRODUCTS LABORATORY, 622 MISSION STREET, KETCHIKAN, ALASKA.



FREEZER WRAP FOR FOODS

A coating for meats and other foods, apparently usable as a covering for consumer items or as a "freezer wrap" for products in storage, is being studied by meat processors. Product of a New Jersey plant, the coating has as its base a purified, vacuum-dried derivative of Irish moss, which is mixed with sorbitol and water to produce a skin which can be applied by dip or spray and will set in 30 seconds. The coating is transparent and resilient and can be removed by peeling. It remains firm at temperatures up to 115° F. and is unharmed by freezer conditions. Reports indicate that the product may be used for freezer-burn and moisture-loss protection.

--National Provisioner, Sept. 3, 1952

TRENDS AND DEVELOPMENTS

Additions to the U. S. Fleet of Fishing Vessels

Vessels of 5 net tons and over issued first documents as fishing craft during September totaled 66--15 more than in September 1952. Virginia led with 21 vessels, followed by Florida with 20 vessels, and Louisiana with 8 vessels, according to the Bureau of Customs.

Vessels Issued First Documents as Fishing Craft, September 1953 and Comparative Data					
Section	September		January-September		Total
	1953	1952	1953	1952	1952
	Number	Number	Number	Number	Number
New England	2	2	18	25	30
Middle Atlantic	1	-	16	22	26
Chesapeake	14	8	67	51	65
South Atlantic	10	7	79	64	89
Gulf	27	25	183	113	161
Pacific	9	5	148	192	203
Great Lakes	-	2	5	9	13
Alaska	3	2	46	82	88
Hawaii	-	-	2	-	-
Total	66	51	564	558	675

NOTE: VESSELS HAVE BEEN ASSIGNED TO THE VARIOUS SECTIONS ON THE BASIS OF THEIR HOME PORT.



California

AGE COMPOSITION OF 1952 ANCHOVY CATCH: Preliminary estimates of the age composition of the 1952 (August through December) anchovy catch in California were obtained by cooperative work of the Service's South Pacific Fishery Investigations and the California Department of Fish and Game. In central California (Monterey and San Francisco), about 35 percent of the fish belonged to the 1949 year-class, about 30 percent to the 1950 class, and about 20 percent to the 1948 class. The remaining 15 percent of the catch came from the 1946, 1947, 1951, and 1952 classes.



Northern Anchovy
(*Engraulis mordax*, Pacific)

In the San Pedro catch, however, about 50 percent of the fish belonged to the 1952 class, with less than 20 percent each from the 1951 and 1950 classes. The 1948 and 1949 classes contributed the remaining 10 percent.

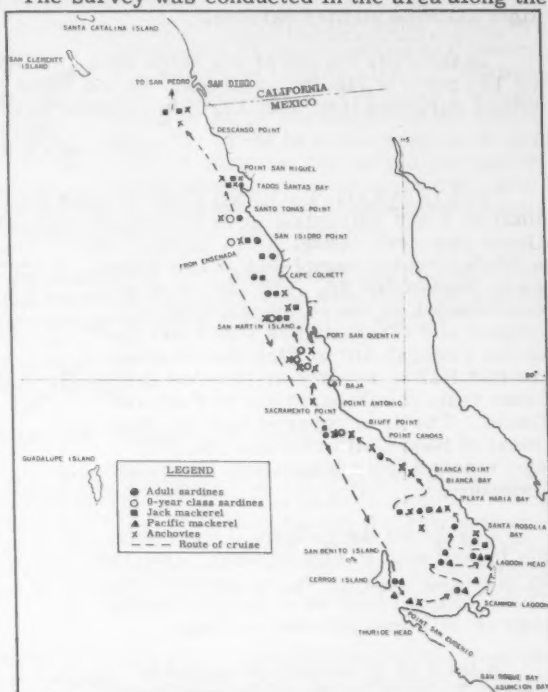
YOUNG SARDINES FROM 1953 SPAWNING ASSESSED BY "YELLOWFIN" (Cruises 53-Y-8 and 53-Y-9): The 1953-year class of California sardines (pilchard) appears to be another weak one, according to observations on the 17-day cruise of the California Department of Fish and Game's research vessel Yellowfin completed at Los Angeles on September 17. However, it seems to be slightly stronger to the north than was the

1952-year class. This was the second of four cruises to attempt the assessment of young sardines from the 1953 spawning. The survey was conducted in the area along the coast of northern Baja California from Point Eugenia to the Mexican Boundary, reports an October 6 release from that agency.

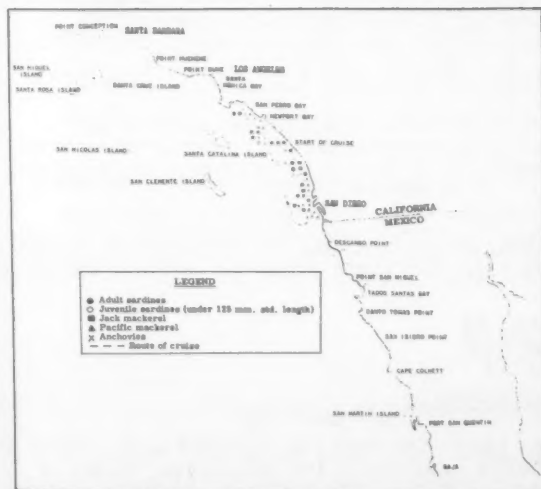
There appears to be more sardines north of Pta. Baja and fewer in Sebastian Vizcaino Bay in 1953 than in 1952, thus the sardine seems to be distributed slightly more to the north.

In Sebastian Vizcaino Bay round herring were very numerous. Anchovies were scarce in this area but were more abundant to the north. There is evidence of a fair 1953-year-class of Pacific mackerel in Sebastian Vizcaino Bay and to the south, but there is a scarcity north of Pta. Baja. Jack mackerel appeared intermittently throughout the entire area surveyed.

The Yellowfin traveled a total of 351 miles while scouting for fish, and observed 210 schools--it was estimated that 35 contained sardines, 33 anchovies, 15 jack mackerel, and 10 Pacific mackerel. Seventy-four light stations were occupied yielding 21 samples of sardines, 25 of anchovies, 14 of jack mackerel, and 8 of Pacific mackerel. Of the 21 samples of sardines collected, seven contained sardines less than 125-mm. standard length. Twenty-eight percent of the light stations yielded sardines. In this same area during the 1952 survey 27 percent of the light stations yielded sardines.



M/V YELLOWFIN CRUISE 53-Y-8, AUG. 31-SEPT. 17, 1953.
EACH MARK REPRESENTS ONE SAMPLE.



M/V YELLOWFIN CRUISE 53-Y-9, SEPT. 28-OCT. 4, 1953.

The third cruise to assess the relative abundance of young sardines from the 1953 spawning and to measure the abundance of anchovies, jack mackerel, and Pacific mackerel was completed by the Yellowfin on October 4. The area along the coast of Southern California from Point Fermin to the Mexican Boundary was covered by this 6-day cruise.

The Yellowfin traveled a total of 130 miles, and five schools were observed en route--3 were estimated to be anchovies and 2 to be jack mackerel. One school of breeding fish was observed during the day alongside the vessel one mile south of Oceanside. The school was sampled and found to be anchovies.

Twenty-nine light stations were occupied yielding 9 samples of sardines, 23 of anchovies, 12 of jack mackerel,

was a total of 108 nets registered and the catch amounted to 466,674 pounds, valued at \$60,915--consisting of 70,950 buck and 65,452 roe shad.



OYSTER PRODUCTION, 1952: The production of seed oysters in Connecticut waters in 1952 totaled 237,064 bushels, valued at \$681,476 or an average price of \$2.87 per bushel to the producers. This is a decrease of 36 percent in quantity, but only 3 percent in value when compared to the 1951 production of 367,828 bushels, valued at \$700,177 or an average price of \$1.90 per bushel.

Oystermen are concerned over this declining production of seed oysters.

The Connecticut production of market oysters in 1952 totaled 163,922 bushels and the average price was \$3.20 per bushel to the producers as compared with the 1951 production of 104,220 bushels which brought an average price of about \$3.30 a bushel.



Federal Purchases of Fishery Products

FRESH AND FROZEN FISHERY PRODUCTS PURCHASED BY DEPARTMENT OF THE ARMY, SEPTEMBER 1953: The Army Quartermaster Corps in September 1953 purchased 2,292,199 pounds (valued at \$1,025,071) of fresh and frozen fishery products for the military feeding of the U. S. Army, Navy, Marine Corps, and Air Force (see table). This was a decrease of 24.8 percent in quantity and 28.1 percent in value as compared with August purchases, and lower by 36.3 and 34.7 percent, respectively, when compared with a year ago.

Army Quartermaster Corps purchases of fresh and frozen fish during the first nine months in 1953 totaled 21,406,211 pounds (valued at \$9,294,731), 18.0 percent lower in quantity and 21.3 percent less in value as compared with the similar period a year earlier.

Purchases of Fresh and Frozen Fishery Products by Department of the Army (September and the First Nine Months of 1953 and 1952)							
QUANTITY				VALUE			
September		January-September		September		January-September	
1953	1952	1953	1952	1953	1952	1953	1952
Lbs.	Lbs.	Lbs.	Lbs.	\$	\$	\$	\$
2,292,199	3,599,651	21,406,211	26,103,721	1,025,071	1,569,421	9,294,731	11,815,029

The over-all average price paid for fresh and frozen fishery products by the Department of the Army during September was 44.7 cents per pound, compared with 46.8 cents the previous month and 43.4 cents in September 1952.

In addition to the purchases of fresh and frozen fishery products indicated above, the Armed Forces generally make some local purchases which are not included in the above figures. Therefore, actual purchases are somewhat higher than indicated, but it is not possible to obtain data on the local purchases made by military installations throughout the country.



Fur-Seal Skin Prices Lower at Fall Auction

Fur-seal skin prices were lower at the semiannual auction of Government-owned fur-seal skins at St. Louis on October 5, the U. S. Fish and Wildlife Service reported to Secretary of the Interior McKay recently. United States skins from Alaska and small lots of South African and Uruguayan skins were offered for sale.

A total of 27,113 skins from the Pribilof Islands, Alaska, where the sealing industry is administered by the U. S. Fish and Wildlife Service, was sold for \$1,944,920. At the last auction in April, U. S. receipts from the sale of 24,400 Alaska skins amounted to \$2,084,101. The average price for Alaska skins sold for the U. S. Government in October was \$71.73 per skin, compared with \$85.42 per skin at the April auction.

Of the Alaska skins sold, 16,017 were "matara" brown, 2,900 were "safari" brown (a lighter brown), and 8,196 were black. The matara skins brought an average of \$64.03 per skin as compared with the April average of \$82.67. The safari skins sold for an average of \$45.23 as against \$59.51 in April. The black skins averaged \$96.17, compared to \$100.52 at the April auction.

Because sizes and qualities of skins differ somewhat from one auction to another, these comparisons must be considered relative.

In addition to the U. S. -owned skins, 5,001 Cape of Good Hope fur-seal skins were sold for the South African Government at an average of \$25.86 per skin and 817 Uruguay fur-seal skins were sold for the Uruguayan Government at a \$24.73 average.



Gulf Exploratory Fishery Program

"OREGON" DRAGS AT 830-FATHOM DEPTH: A drag at a depth of 830 fathoms was made by the U. S. Fish and Wildlife Service's exploratory fishing vessel *M. V. Oregon* in the northern Gulf of Mexico on October 6, 1953. This was the deepest fishing that the vessel has carried out to date, and it was made with a 40-foot shrimp trawl using 2,300 fathoms of trawling cable. The position was 28°58' N., 88°00' W., about 60 miles east of the mouth of the Mississippi River.

Examination of the chain lead line proved the net had been on the bottom at this depth of nearly one mile. The catch was small, and included seven pounds of very small black fishes and a quart of many kinds of red caridean shrimp. The catch was of more scientific interest than of commercial value at present. Since the net was open at all times, the fish could have been caught at any depth between the surface and the bottom.

Thirty minutes were required to set the trawl, and the haulback took one hour and 45 minutes. Valuable experience was gained for use in future deep-water explorations.



Gulf States Marine Fisheries Commission

SHRIMP MAIN TOPIC AT TAMPA MEETING: White shrimp (*Penaeus setiferus*) was the main topic of discussion at the meeting of the Gulf States Marine Fisheries Commission at Tampa, Florida, on October 15 and 16. Scientists from the Gulf States, universities, and federal agencies pooled their information on the white shrimp, one of the most important commercial species on the Gulf Coast, and it adds up as follows:

Researchers Know--Characteristics (size composition, state of maturity, and sex ratio) of the commercial catch, both in the inshore and offshore Texas fisheries from 1931 to 1936, and in the Louisiana offshore fisheries from 1940 to 1942. The distribution, size composition, and state of maturity of shrimp along the entire Louisiana coast, in bayous, bays, and inside waters, as determined by fishing with commercial gear from a research vessel during 1931 to 1934. That shrimp spawn in outside waters; when they spawn; how many eggs they produce at one batch. The young move into inside waters of low salin-



ity at a very small size; as they grow they move gradually toward waters of higher salinity, and finally into the open sea. In the open sea west of the Mississippi, shrimp move about at random, in and out along the coast, sometimes traveling as far as 100 miles; east of the Mississippi they move in the direction of the Delta. In Texas, as in other places, young shrimp move from inside to outside. Some large shrimp occur along the northern coast of Mexico during early spring; later in the spring they move northward along the southern Texas coast, going as far as Port Aransas. The annual crops of shrimp fluctuate in abundance.



A MIXED CATCH OF FISH AND SHRIMP JUST AS IT HAS BEEN DUMPED ON THE DECK OF AN OFFSHORE SHRIMP TRAWLER.

good estimates of growth rates below 100 millimeters. The anatomy of early stages of the life history of the shrimp. A number of things about their natural history, but there are many gaps in this knowledge. For example: exactly what shrimp eat, what nourishes them, what stimulates them to moult, to migrate horizontally and vertically, to congregate or disperse, etc., are not known.

Researchers Believe: Shrimp spawn more than once, probably in waves with two dominant waves--one in the spring, the other in the fall. In order to survive, young shrimp must reach inside waters. The Mississippi River outflow marks a line of division across which shrimp do not migrate. Large shrimp move southward in fall and early winter along the south Texas and north Mexican coasts. No correlation exists between the number of spawners and the size of broods within the range of abundance over which the researchers have had experience. Climate, offshore hydrographic factors, such as the inshore drift, for example, and unknown conditions in inside areas determine brood survival. Life span of shrimp is something over a year; a few may live as long as two years, perhaps even longer.

Researchers Do Not Know: What combination of factors determines year-brood survival; how many shrimp are caught; specifically where they are caught or how much effort goes into catching them; size of shrimp stocks in the Gulf of Mexico; and fishing effect on stocks. If the species composition has changed in recent years, the extent or nature of such changes is unknown. In some areas brown shrimp may have increased and white shrimp decreased. There is some evidence that different species do not intermingle; whether and how they react upon each other is unknown. Average mortality rates of shrimp and effect on the stock of predation or nature, competition, and disease. Distribution of spawning grounds or relation of their location to entrances into inside waters. Mechanism that carries larvae into inside waters.



Japanese Tuna Mothership Freights Frozen Tuna to U. S.

The Japanese tuna mothership Banshu Maru No. 38 on October 16 landed at San Pedro, California, a cargo of 604 tons of frozen yellowfin tuna and 10,584 cartons of frozen yellowfin tuna fillets. The vessel loaded at Tokyo, Japan. This is the first instance of a Japanese mothership freighting frozen tuna to a United States port, reports the Service's Fishery Marketing Specialist at San Pedro.

The frozen yellowfin tuna consisted of 18,056 fish (1,207,200 pounds) in the round; and the fillets weighed 591,264 pounds. The fish were to be canned in a San Pedro plant.



Maryland

OYSTER SURVEY: In October an intensive three-week survey was conducted of Maryland's natural oyster bars lying in the Chesapeake Bay and several of its larger tributaries, reports an October 22 bulletin of the Chesapeake Biological Laboratory of Maryland's Department of Research and Education. The oyster-bar survey, the major phases of which are complete, was a joint undertaking by personnel of that Department, the Department of Tidewater Fisheries, and the U. S. Fish and Wildlife Service Chesapeake Shellfish Investigations at Annapolis. Approximately 140 half-bushel samples of random mixed material caught by commercial dredge on bars in the Bay and larger tributaries have been examined. Records have been made of the number of marketable oysters, small oysters, spat, 3-inch shells, large and small boxes, together with percent of cinder and observations of oyster enemies, fouling organisms, condition of oyster meats, type of bottom, etc. Detailed findings are filed with the several cooperating agencies. A brief summary of the observations follows:



TONGING OYSTERS IN CHESAPEAKE BAY.

Oysters throughout the area were found generally to be extra fat for this early in the season. Only in the lower portions of the Bay and of Tangier Sound were oysters found with considerable undischarged spawn and fall fattening less advanced than elsewhere. Growth appears to have been slow during the summer but rapid fall growth is in progress. Reports were heard of summer mortalities in certain areas, but on most bars examined survival of oysters was about normal. On the basis of hearsay evidence, it appears that isolated areas in deep water and at a few locations exposed to excessive fresh water during spring and summer may have suffered higher than normal oyster mortalities. Losses on the deep portions of certain bars occur periodically and are believed to be associated with a lack of oxygen caused by marked stratification such as occurred early last summer.

Survival and growth of seed oysters planted in the fall of 1951 and spring of 1952 have been excellent, and these are expected to contribute materially to catches this season. Setting both on natural cultch and planted shell generally has been low so that recruitment to the oyster population is very poor for 1953. A set of 25 to 30 spat per bushel occurred on natural cultch on the Upper Bay Bars along the Eastern Shore, and although a low figure, is better than the average during recent years for that area. Setting was near zero along the Western Shore of the Bay, and in the Choptank and Potomac Rivers. Tangier Sound, Eastern Bay, and Hoopers Straits were other areas visited with light sets considerably below those of other years.

In the seed areas, only the St. Marys River produced sets of commercial value for seed purposes. Counts of spat on 1953 shell in that area were 675 per bushel for the Gravelly Run-Seminary planting and 871 per bushel for Martin Point. The new shells in most cases are mixed with older shells and smaller oysters, but counts of all material caught or "run of the bar" generally were in excess of 600 oysters per bushel.

Several samples of 1953 shells from the Holland Straits planting counted around 200 spat per bushel. On parts of Cinder Hill there were enough yearlings and small oysters on old shell to make the "run of the bar" counts slightly higher but still below the quality usually considered acceptable as seed. New shells on the seed area in Eastern Bay averaged only 35 spat per bushel and setting in that region generally seems to have been a failure.

Most of the other State shell plantings examined failed to receive as many spat as expected, but typically had better sets than did natural cultch in the same areas. Reflecting the slightly better than usual set along the Eastern side of the Upper Bay, the shells planted out of Baltimore last winter at Gum Thicket (lower shore of Kent Island) caught 115 spat per bushel. Those at Poplar Island, however, only showed 14 spat per bushel. At times, scattered original spat or small oysters on the shells before planting were found and had survived well. Where these were especially abundant at a planting on Kirby's in the Choptank, it was found that 88 percent had survived on the basis of a comparison with boxes also present on the planted material. This count was exclusive of small spat which would not be apparent at this date if they had died early in the year.

The highest spat count thus far found occurred on a 1953 shell planting in the upper part of the Great Annemessex where 1,076 spat per bushel was recorded. Other tributaries, some of which usually show high sets, will be examined later.



New England Tuna Explorations

FINAL CRUISE OF "MARJORIE PARKER" (Cruise 4): Only seven bluefin tuna were caught by the schooner Marjorie Parker on the final cruise of the 1953 season. This vessel, chartered by the Service's Branch of Commercial Fisheries on July 15 for the Gulf of Maine tuna exploration, completed the last cruise at Portland, Maine, on October 14.

The vessel left port on September 21 and during the latter part of September exploratory fishing and gear testing was conducted off the southeastern coast of Nova Scotia, on Browns Bank, and in the "Gully" between Browns and Georges Banks. Only six bluefin tuna were captured on long lines and one tuna was caught on surface-trolling gear. No schooling tuna were sighted in this area.

In early October, operations were carried out in the vicinity of Cashes Ledge from 60 to 70 miles southeast of Portland Lightship, and in the South Channel 40 miles east-southeast of Pollock Rip Lightship. No tuna schools were observed near Cashes Ledge, and fishing results were negative.

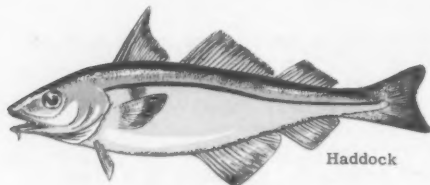
On the morning of October 10, within a space of three hours, four schools of tuna were sighted in South Channel. The fish were traveling fast and appeared to be feeding on small herring and other unidentified species which were observed in the water. Long-line sets failed to produce tuna, although the gear was set directly in the path of the schooling fish. One school, estimated to comprise about 100 tuna in the 30- to 45-pound class, was chummed alongside the boat, but hand-line fishing was unsuccessful. Adverse weather conditions prevented fishing in this area after October 11.

Although tuna catches this year were generally poor and far below those of the first two years' explorations, it does not necessarily mean that the run of New England tuna was smaller than average. This year's exploration was delayed until July 15 due to budget uncertainties, and a large early run of tuna was completely missed. Also, most of the fishing was planned to explore the offshore waters near the edge of the Gulf stream, and little effort was devoted to the inshore areas where the presence of tuna has been well established.



North Atlantic Fishery Investigations

ZERO-AGE HADDOCK FOUND TO BE SCARCE OFF NEW ENGLAND BY "ALBATROSS III" (Cruise 55): A scarcity of zero-age haddock in the Southern New England Banks and the Gulf of Maine and Georges Bank area was found by the Service's research vessel Albatross III on a 3-day cruise completed at Woods Hole Mass., on September 25. This indicates poor survival of the 1953 year-class of haddock. This cruise was made to continue the study on the distribution and numbers of zero-age haddock in connection with early life-history and year-class strength studies.



Only one zero-age haddock was found in the area, while yearling fish of other species, principally butterfish and Gulf Stream flounder, were very numerous. A total of 24 20-minute tows with a No. 36 trawl and 30 bathythermograph lowerings were made.



North Pacific Exploratory Fishery Program

FALL-WINTER HERRING FISHING POSSIBILITIES IN PRINCE WILLIAM SOUND BEING INVESTIGATED BY "JOHN N. COBB" (Cruise 17): An investigation of the commercial herring fishing possibilities in late fall and early winter in Prince William Sound, Alaska, is being conducted by the Service's exploratory vessel John N. Cobb. The vessel sailed from Seattle, Wash., on October 12. The chief purpose of the trip will be to ascertain whether major herring stocks move inshore during the months of October, November, and December, and might be available for commercial fishing. Related information, such as sizes and oil content of the herring, will be obtained. Biological data, including age, weight, and length composition of the catch, will be secured.

Two branches of the U. S. Fish and Wildlife Service will participate in this work: the Branch of Commercial Fisheries and the Branch of Fishery Biology. The John N. Cobb will use depth finders and a newly-developed underwater scanning device to locate herring schools. Samples of herring schools will be obtained with various types of fishing gear, including a herring trawl, sunken gill nets, and a lampara seine.



U. S. Foreign Trade in Edible Fishery Products, August 1953

United States imports of fresh, frozen, and processed fish and shellfish during August 1953 totaled 72 million pounds (valued at \$17.3 million), according to the August 1953

United States Foreign Trade in Edible Fishery Products, August 1953 With Comparisons						
	August 1953		August 1952		Year 1952	
	Quantity 1,000 Lbs.	Value Million \$	Quantity 1,000 Lbs.	Value Million \$	Quantity 1,000 Lbs.	Value Million \$
Imports:						
Fish & shellfish:						
fresh, frozen & processed ^{1/}	72,072	17.3	61,470	14.2	705,118	183.1
Exports:						
Fish & shellfish:						
processed ^{1/} only (excluding fresh and frozen) ..	2,889	0.8	3,739	0.9	56,604	13.5

^{1/}INCLUDES PASTES, SAUCES, CLAM CHOWDER AND JUICE, AND OTHER SPECIALTIES.

United States Foreign Trade, a Department of Commerce publication (see table). This is a decrease of 11 percent in quantity and 9 percent in value as compared with July imports of 81 million pounds (valued at \$19 million). However, August 1953 imports were up 17 percent in quantity and 22 percent in value over a year earlier.

United States exports of processed fish and shellfish (excluding fresh and frozen) in August 1953 amounted to almost 3 million pounds (valued at \$0.8 million), lower by 28 percent in both quantity and value from July exports of 4 million pounds (valued at \$1.1 million). Compared with August 1952, exports were down 23 percent in quantity and 11 percent in value.



Wholesale Prices, October 1953

WHOLESALE PRICES, OCTOBER 1953: A sharp rise in fresh fish prices, particularly haddock, caused October prices for edible fishery products to rise above September levels. The increase was attributed to light landings all along the Atlantic coast. The over-all edible fish and shellfish (fresh, frozen, and canned) wholesale index for October 1953 was 111.3 percent of the 1947-49 average (see table)--6.1 percent higher than in September and 9.5 percent above October 1952, the Bureau of Labor Statistics of the Department of Labor reports.

Because production was light and demand good, October prices for all varieties in the drawn, dressed, or whole finfish subgroup were 15.1 percent higher than a month earlier and 16.4 percent above October 1952. The largest price increase was for large drawn offshore haddock at Boston (41.0 percent), with smaller increases for halibut and salmon at New York City. All fresh-water varieties, except lake trout at Chicago, were down from September levels; September prices were high due to the Hebrew holidays.

Fresh haddock fillet prices at Boston rose 15.1 percent from September to October due to the light landings of fresh haddock; and were 40.7 percent higher than a year earlier. Fresh shrimp at New York City increased slightly (0.9 percent) over the previous month and were quoted substantially higher (19.1 percent) than in October 1952. Shucked oysters were priced the same as in September.

The October frozen processed fish and shellfish index changed only slightly--2.0 percent above the previous month, but only 0.2 percent below the same month a year earlier. Haddock fillets reflected the largest change from the previous month--up 6.0 percent. Frozen ocean perch fillet and shrimp prices increased 1.1 percent, respectively. Flounder fillet prices remained unchanged when compared with September. Compared to October 1952, frozen haddock fillets and shrimp were up, while fillets of ocean perch and flounder were down.

Maine sardines, the only canned fishery product item to show a price change from September to October, went up 6.6 percent; all others remained the same. The pack of Maine sardines this season was considerably smaller than a year earlier. Compared with October 1952, prices for canned tuna and Maine sardines were higher, while pink salmon sold at the same level.



NEW YORK'S FULTON FISH MARKET.

Table 1 - Wholesale Average Prices and Revised Indexes for Edible Fish and Shellfish,
October 1953 and Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices ¹ / (\$)		Indexes (1947-49 = 100)			
			Oct. 1953	Sept. 1953	Oct. 1953	Sept. 1953	Aug. 1953	Oct. 1952
ALL FISH AND SHELLFISH (Fresh, Frozen, and Canned)					111.3	104.9	107.8	101.6
Fresh and Frozen Fishery Products:					122.7	112.3	115.9	108.1
Drawn, Dressed, or Whole Finfish:					130.1	113.0	121.1	111.8
Haddock, large, offshore, drawn, fresh	Boston	lb.	.16	.11	162.0	114.9	114.0	113.4
Halibut, Western, 20/80 lbs., dressed, fresh or frozen	N.Y.C.	"	.30	.30	93.9	92.3	94.4	130.0
Salmon, king, lge. & med., dressed, fresh or frozen	"	"	.55	.51	123.9	114.2	112.1	101.3
Whitefish, mostly Lake Superior, drawn (dressed), fresh	Chicago	"	.49	.63	121.5	154.9	116.5	112.8
Whitefish, mostly Lake Erie pound or gill net, round, fresh	N.Y.C.	"	.52	.74	104.1	148.6	111.2	106.2
Lake trout, domestic, mostly No. 1, drawn (dressed), fresh	Chicago	"	.53	.48	107.6	97.3	117.8	99.4
Yellow pike, mostly Michigan (Lakes Michigan & Huron), round, fresh	N.Y.C.	"	.45	.60	105.5	140.7	132.5	99.7
Processed, Fresh (Fish and Shellfish):					118.5	116.2	113.5	103.7
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.38	.33	129.3	112.3	117.4	91.9
Shrimp, lge. (26-30 count), headless, fresh or frozen	N.Y.C.	"	.67	.67	106.4	105.4	109.1	89.3
Oysters, shucked, standards	Norfolk area	gal.	5.25	5.25	129.9	129.9	117.5	123.7
Processed, Frozen (Fish and Shellfish):					103.4	101.4	100.3	103.5
Fillets:								
Flounder (yellowtail), skinless, 10-lb. pkg.	Boston	lb.	.31	.31	108.7	108.7	108.7	124.4
Haddock, sml., skins on, 10-lb. cello-pack	"	"	.27	.25	98.6	93.0	89.3	93.0
Ocean perch, skins on, 10-lb. cello- pack	Gloucester	"	.22	.22	105.9	104.7	95.1	119.2
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	"	.66	.56	102.2	101.1	106.5	92.6
Canned Fishery Products:					94.5	94.0	95.9	92.0
Salmon, pink, No. 1 tall (16 oz.), 48 cans per case	Seattle	case	17.70	17.70	93.9	93.9	100.4	93.9
Tuna, light meat, solid pack, No. 1/2 tuna (7 oz.), 48 cans per case	Los Angeles	"	15.30	15.30	95.5	95.5	92.4	90.5
Sardines (pilchards), Calif., tomato pack, No. 1 oval (15 oz.), 48 cans per case	"	"	9.25	9.25	108.0	108.0	108.0	109.4
Sardines, Maine, keyless oil, No. 1/2 drawn (3 1/2 oz.), 100 cans per case	N.Y.C.	"	8.20	7.70	87.3	81.7	76.6	76.6

¹/REPRESENT AVERAGE PRICES FOR ONE DAY (MONDAY OR TUESDAY) DURING THE WEEK IN WHICH THE 15TH OF THE MONTH OCCURS.

ANCIENT OYSTERS UNEARTHED

DO YOU KNOW:

That huge fossilized oyster shells, said to be millions of years old, were unearthed in Annapolis, Maryland, in October 1953 when a ditch digger struck "the toughest stuff I've ever struck a pick into."

Some of the oyster shells were several times the size of the present Chesapeake oyster and were almost round instead of elongated. Clam and snail shells were also found in the fossilized material some 15 feet below the surface of the ground.

Similar discoveries of Maryland's seafood ancestors have been made along the York and James Rivers in Virginia, but never before as far north as Annapolis.

--The Compass, August 1953



International

FOOD AND AGRICULTURE ORGANIZATION

INTERNATIONAL FISHING BOAT CONGRESS ATTRACTS KEEN INTEREST: The Fisheries Division of the Food and Agriculture Organization of the United Nations (FAO) sponsored an International Fishing Boat Congress with one session in Paris October 12-16, 1953, and a second session in Miami November 16-20, 1953. Reports from FAO headquarters in Rome indicated heavier registrations than anticipated for both meetings. About 60 papers by foremost vessel and equipment designers were presented.



The Miami meeting was held in cooperation with the U. S. Fish and Wildlife Service and the University of Miami Marine Laboratory. Participation was open not only to representatives of governments, but also to members of the fishing industry, naval architects, boat builders, engine manufacturers, etc.

UNITED NATIONS KOREAN REHABILITATION ADMINISTRATION

FISHING VESSEL PURCHASE PROGRAM: There is no certainty that any vessels will be purchased soon by the United Nations Korean Rehabilitation Administration, according to reports received early in October from the chief of the fishery rehabilitation program in Korea. If any are purchased they will be used vessels, not new ones. On the other hand, there will be further allocation of funds in 1954 and consideration will be given then to the question of new construction.

The chief of the fishery rehabilitation program and two Koreans were in New York early in October to decide if any vessels will be purchased, and if so, the size and type.

It is unlikely that any tuna bait boats or purse seiners will be purchased--they are too large for the fishing techniques employed by the Koreans who want the vessels for fishing sharks. Customarily the Korean fishermen use a pair of boats to drag a net.

A "few" bids were received from countries other than the United States.

The chief of the program and his Korean associates were scheduled to visit Gloucester, Massachusetts, to look at some small draggers which are believed to be more nearly the type appropriate for Korean use. The three will later visit other coastal areas, particularly the Pacific Coast, simply "to look around."

INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA

FORTY-FIRST STATUTORY MEETING AT COPENHAGEN: The International Council for the Exploration of the Sea held its 41st Statutory Meeting at Copenhagen, Denmark, September 28 to October 6, 1953, an October 9 U. S. Embassy dispatch from Copenhagen states. The following member countries were represented at the conference: Belgium, Denmark, Finland, France, Federal Republic of Germany, Great Britain, Iceland, Ireland, The Netherlands, Norway, Portugal, Spain, and Sweden. In addition to the delegates there were 86 experts present from member countries. Ireland and Portugal were the only member countries that did not send experts. Observers (8) came from Canada, the United States, New South Wales, and the Food and Agriculture Organization, the

Woods Hole Oceanographic Institution, and the International Commission for the Northwest Atlantic Fisheries. Dr. Herbert W. Graham, Chief, North Atlantic Fishery Investigations, U. S. Fish and Wildlife Service, Department of the Interior, was the official observer for the United States.

During the course of the conference, 56 technical papers were presented in English, French, or German, and these were published in whole or in part in 45 documents, copies of which were made available to all representatives and observers. Fourteen of the reports dealt with cod and cod fishing, 18 on other fish and shellfish, 7 on fishing methods, 5 on echo measurements and fishing, and 12 with problems of hydrology and oceanography.

These are some of the papers presented at the meeting:

<u>Doc. No.</u>	<u>Title</u>	<u>Author</u>
6	The Use of the Echometer in Fish Location - A survey of present knowledge with notes on the use of ASDIC	R. E. Craig
7	Echo Sounding Experiments on Fish	D.H. Cushing & E.D. Richardson
8	The Littoral Cod of the Norwegian Skagerak Coast	Alf Dannevig
13	The State of the Northern Stocks of Cod	H.W. Graham
14	A Note on Published Trawler/Seiner Comparisons	Graham, Beverton, Margetts, & Gulland
15	Some Trials of Seines and Trawls in 1953	Graham, Margetts, and Gulland
18	The Stock of Cod in Greenland Waters during the Years 1924-1953	P. M. Hansen
	Statistics of North Sea Herring Catches and of Catches Per Unit of Effort	B. Havinga
	Lobster Catches Per Unit of Effort during a 4-year Period	B. Havinga
19	On the Changes of the Stock of Cod in the Baltic	As. J. C. Jensen
20	On the Cod in Faroe Waters	J.S. Joensen
21	On the Icelandic Stock of Cod during the Years 1928-1953	Jon Jonsson
29	The Cod Population of the Oslofjord	F. Otterbech
30	A Proposal for the Introduction of Organized Echo-Search in North Sea Herring Investigations	B.B. Parrish
34	Contribution a l'Etude des Thonides de l'Atlantique Tropical (Contribution to the Study of Tropical Atlantic Thunnidae)	E. Postel
36	Observations on Cod and Cod Fisheries in Lofoten	G. Rollesfsen
44	The Efficiency of the Cornish Pot and the Scottish Creel in the Capture of Lobsters and Crabs	H. J. Thomas

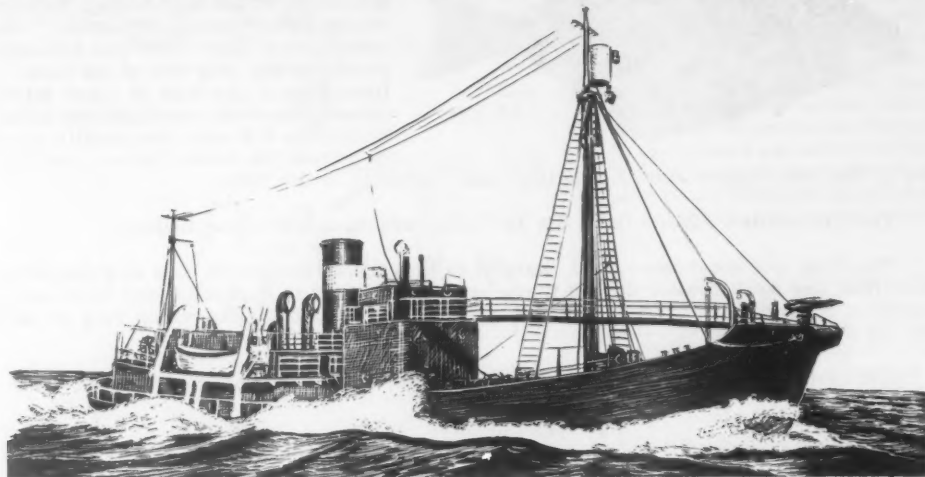
WHALING

1953/54 ANTARCTIC SEASON: A total of 18 pelagic whaling expeditions will operate in the Antarctic during the 1953/54 season; 9 of these will be Norwegian expeditions, reports a September 21 U. S. Embassy dispatch from Oslo. In addition, probably one shore station will be in operation.

All of the floating factories are due to reach the Antarctic before January 2--when the fin-whale season begins--as agreed by the International Whaling Convention. Blue whales will be protected two extra weeks this coming season, until January 16. The total catch limit has been set at 15,500 blue-whale units as against 16,000 units previously.

Norwegian, British, and Dutch whale research scientists will accompany the Norwegian catcher Enern. They will take along 1,200 marked arrows and hope to tag from 500 to 600 whales of the blue, fin, and bottlenose species.

The number of catchers operating with expeditions of all countries will be reduced from 230 for 16 expeditions to 210 for 18 expeditions. An agreement has been made to



TYPE OF MODERN CATCHER BOAT USED BY NORWEGIANS DURING THE 1953/54 ANTARCTIC WHALING EXPEDITION.

reduce the number of whale catchers, and this agreement has been signed by all companies except the one Soviet company. There will be 105 Norwegian whale catchers.

This reduction in the number of whale catchers will not, according to the Norwegian Whaling Gazette, cause any reduction in total whale-oil production but may result in a prolongation of the season. Operating expenses will be cut because of present low whale oil prices.

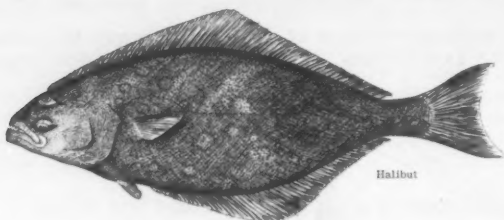
Norwegian Whale-Oil Production Almost All Sold: Practically the entire 1953/54 Norwegian Antarctic whale oil production has been sold at prices varying from Kr. 1,350 to Kr. 1,430 (US\$190-200) per long ton, reports an October 15 release from the Norwegian Information Service. The prices average Kr. 1,365 (US\$191) per long ton as compared with the average of Kr. 1,420 (US\$200) a ton received in the 1952/53 season.

British and South African Whale-Oil Sales Guaranteed: The British Ministry of Food has agreed to pay £67 10s. (US\$190) per long ton for the 1954 output of whale oil by British and South African whaling companies, according to the November 2 Foreign Crops and Markets, a U. S. Department of Agriculture publication. The price paid for the past season's output was £76 (US\$213) per long ton and for the 1952 production the price was £110 (US\$308). Most of the British ships are expected to leave for the Antarctic whaling grounds in November.

INTERNATIONAL PACIFIC HALIBUT COMMISSION

NEW CONVENTION TAKES EFFECT: A new Convention between the United States and Canada for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and Bering Sea came into effect on October 28 when Secretary of State Dulles and Canadian Ambassador Heeney exchanged instruments of ratifications in Washington. An amendment to the Halibut Fishery Act of 1937 which will make that law applicable to the new treaty became effective at the same time, reports a U. S. State Department release.

The Halibut Convention, which was signed in Ottawa on March 2, 1953, is the fourth in a series between the two governments and replaces the Convention of 1937. The name



of the Commission, originally established by the 1923 Convention and continued since that date, has been changed to International Pacific Halibut Commission. Its former name, "International Fisheries Commission," was chosen at a time when this Commission was the only one of its kind. The formation since then of other international fisheries commissions made it desirable that each be readily identified from its name; hence, the addition

tion of the descriptive words "Pacific" and "halibut" to the name.

The Convention differs from the 1937 Convention in three particulars:

The first and most important changes is that the Commission may now establish more than one open season during the year. This power to declare more than one open season is expected to increase the yield from some halibut stocks which may be underutilized at present.

The size of the Commission is enlarged from four to six members, three from each country.

The third change of substance is a provision for the exercise of regulatory authority respecting halibut caught incidentally to fishing for other species of fish during the open season. The 1937 Convention had provided for this type of regulation only during the closed season.



Angola

TUNA CANNING: There are four species of tuna canned in Angola: albacore (*Neothunnus albacora*), patudo (*Parathunnus obesus*), bonito (*Katsuwonus pelamis*), and gaiado (scientific name unknown), reports a September 11 U. S. consular dispatch from Luanda.

The tuna-in-brine pack prepared in Angola is processed in the following manner:

The fish is eviscerated, beheaded, and cut into four fillets. The fillets are then cut the length of the can in which they are to be packed. Cutting, cooking, and other operations are performed mechanically; cans are packed by hand.

The fish is cooked by immersion in brine heated by steam coils. After cooking, bones and skins are removed.

Both the "solid pack" and the "flake pack" are packed in 13-oz. cans (48 cans to a case) and 74½-oz. cans (12 cans to a case). The tuna is packed in a light brine solution.



Bahama Islands

STATUS OF THE FISHERIES: **Fisheries Lack Capital:** Limited supply and uncertain financial returns of the Bahamian fisheries have resulted in comparatively little capital investment from domestic and foreign sources towards its development and promotion, reports a September 4 U. S. consular dispatch from Nassau. The Agricultural

and Marine Products Board of the Bahamas Government is striving to foster and encourage further development and protection of the fisheries.

Retail Price Controls for Fishery Products: Due to the continued rising of retail fish prices, maximum prices were announced by the Essential Supplies and Price Control Committee on January 23, 1953. These prices became effective on January 26, and sellers were ordered to install weighing scales in the Public Fish Market. A protest was made by the Out Island fishermen, who objected as strongly to the scales as to the control of fish prices. Spanish Wells and Abaco fishermen refused to bring any fish to the local market.



On February 3, 1953, the Committee raised the maximum prices of fishery products as follows: conch was increased from 1s. (14 U.S. cents) to 2s. 6d. (35 U.S. cents) per pound; first-grade fish: from 2s. to 3s. (28 to 42 U.S. cents) per pound for the tail portion, 1s. 6d. to 2s. 6d. (21 to 35 U.S. cents) per pound, for the head

portion, and 1s. 9d. to 2s. 9d. (24 to 38 U.S. cents) per pound for whole fish. Retail prices of other fish, second- and third-grade fish, turtle, and spiny lobster were correspondingly increased. These higher maximum prices were closer to the retail prices in effect immediately prior to the first price control order.

Spiny Lobster Catch and Exports: Approximately 939,931 spiny lobsters (crawfish) with a total weight of 1,424,150 pounds were taken in the fishing season from October 1 to March 15, 1953. The value of the catch was £76,051 (US\$212,900) ex-vessel, and a royalty of £1,880 (US\$5,250) was received.

Spiny lobster exports during 1952 were valued at £99,649 (US\$279,000), compared to 1951 exports valued at £90,805 (US\$254,000).

Finfish Exports: Finfish exports during 1952 totaled about 184,800 pounds, valued at £10,656 (US\$29,800).

Sponge Industry: The first closure of the sponge beds off the Bahamas necessitated by the sponge blight was in 1939. The beds were reopened in 1946, but sufficient improvement had not been made so the beds were reclosed from late in 1947 through 1952.

Sponge exports in 1952 were limited to stocks on hand--300 pounds, valued at £664 (US\$1,850), compared to 400 pounds, valued at £1,620 (US\$4,500) in 1951.

In earlier years the sponge industry and sponge exports held an important place in the Bahamian economy. At its height the industry employed approximately 4,000 workers. The big proportion of these men, especially those from Andros, Abaco, and Long Island, now make their livelihood by fishing. The Agricultural and Marine Products Board feels that the future outlook for the sponge industry is encouraging and plans to make a preliminary survey to determine what improvement has occurred during the closure period.



Brazil

SHRIMP FISHERY EXPANSION POSSIBLE: Production of shrimp in Brazil has been relatively small, chiefly for local fresh markets, reports an October 1 U. S. Embassy dispatch from Rio de Janeiro. But according to Government and trade sources, shrimp are abundant in Brazilian coastal waters and could provide a substantial output for export as well as for greater domestic consumption. The chief requirements appear to be skilled management, the investment of capital in trawlers and facilities for handling and processing, and reasonably favorable government treatment in matters of import licenses and exchange rates.

Shrimp are reported abundant along most of the Brazilian coast. The present catch is made largely by small operators in inshore waters near the larger cities, and sold on local fresh markets. Commercial interest is growing, however, in fishing the more distant grounds to provide frozen shrimp for both the large Brazilian cities and for export.

The area obtaining most consideration is the northern coast from the mouth of the Amazon River to Recife. Fishery officials of the Ministry of Agriculture claim that supplies of inshore shrimp are available in this area throughout the year, and that off-shore waters yield heavy catches of large shrimp from June through September. Exploratory work to obtain information on the latter apparently is being contemplated by certain United States interests. Large-scale operations on the North Coast would meet little competition from local fishermen. The distance to U. S. markets is less than from other shrimp-producing sections of the coast.

Officials of the Brazilian Government appear favorably inclined towards expanded fishing operations both by Brazilian and foreign capital. They believe that costs of seafood for Brazilian consumers, now at a high level compared to the relatively abundant resources, can be reduced substantially and that badly needed foreign exchange can be derived through use of modern fishing vessels and freezing facilities.

A shrimp fishing company was established in northern Brazil in 1951 by a U. S. citizen in Sao Luiz, Maranhao. This firm is now distributing frozen shrimp in coastal towns, including Rio de Janeiro and Sao Paulo, and is reported in the process of developing a market in the United States. The apparent success of this firm is encouraging formation of other companies and rapid development of shrimp fishing in the region is possible during the next few years.

There are certain factors, however, which may retard the development of a shrimp industry in Brazil. Brazil's present deficiency in foreign exchange makes it difficult to obtain import licenses and official exchange for necessary equipment. Also, to make exports possible, a preferential exchange rate will be needed substantially higher than the present basic rate of 18.36 cruzeiros to one U. S. dollar, which currently is applicable to shrimp. There is a further hazard in the quotas for domestic consumption frequently set by government authorities. These quotas are subject to local ceiling prices before exports are allowed.



Canada

BRITISH COLUMBIA SALMON EXPORT REGULATIONS: On the recommendation of the Minister of Fisheries, the Governor General in Council on September 17 amended the section of the British Columbia Fishery Regulations dealing with the export of salmon, reports an October 2 release from the Canadian Department of Fisheries. The amendment (Order in Council P.C. 1953-1416) revoked paragraph 2 of subsection 3 of section 6, and substituted a paragraph which has the effect of allowing the export of fresh coho (silver) salmon during the present year, but limiting it after September 1, 1954. The new paragraph (2) reads:

"(2) On and after September 1, 1954, no one shall export from Canada 'coho' salmon except in a canned, salted, smoked, cured or frozen condition."

The British Columbia Fishery regulations were made and established by Order in Council P. C. 5887 of November 22, 1949, as amended.

* * * * *

B. C. SALMON CANNERS NEGOTIATING FOR LARGE SALE TO BRITAIN: The British Columbia salmon industry is now negotiating for the sale of additional canned salmon to the United Kingdom, reports an October 2 U. S. Embassy dispatch from London. The London Daily Express (September 30) carried the following story with an Ottawa dateline:

"...The British Columbia salmon industry hopes to sell several million dollars worth of canned salmon in Britain through buying British equipment for the West Coast industry, a fisheries Department official said today.

"The deal to provide Britain with dollars to buy B. C. salmon is being discussed in London this week by Fisheries Minister James Sinclair, J. M. Buchan, president of B. C. Packers, Ltd., and Roger Hager, president of the Canadian Fishing Company, Ltd.

"An official said in Ottawa that members of the B. C. salmon canning industry have put together a parcel of orders for equipment such as tinplate, Diesel engines for boats, nets and lines which they would buy in Britain.

"It amounts to several million dollars, he said. It would not be a straight barter deal, but representatives of the industry would ask that the dollars be spent on B. C. salmon.

"Canada's former big market in Britain for salmon declined sharply since 1945 because of Britain's acute shortage of dollars. In the last four years Canada has sold 11,200,000 dollars (£4,000,000) worth of salmon to Britain and now faces large surpluses on the Canadian market."



Denmark

FISHERIES TO EXPAND: New Harbor Construction: New construction and expansion of fishing harbors is planned in the Danish North Sea ports of Skagen (the Skaw) and Frederikshavn, reports the October 3 issue of The Fishing News, a British trade magazine. At Frederikshavn a new fishery harbor will be constructed to cost about US\$2.8 million.

Skagen seems to be facing a great future as the largest fishing port in Denmark as the harbor is being expanded at a cost of about \$1.7 million. At present Skagen can accommodate about 400 vessels, but after it has been expanded the harbor will handle about 800 vessels. Fishermen from Esbjerg and other Danish fishery towns are planning to move to Skagen; the town will also more and more become the rendezvous of Norwegian, Swedish, and German cutter fleets. Until now Denmark's largest fishery port has been Esbjerg, but this port will have to surrender its title to Skagen.

Modern Vessels for Fishing Off Greenland: Some Danish shipyards are building modern wooden fishing vessels for Greenland fishing to meet the competition from many foreign vessels now fishing off Greenland. Danish authorities are also building several fish houses in West Greenland towns as the existing storage is inadequate.

Greece

SPONGE CULTURE METHOD: The discovery of a new method of sponge propagation and culture in Greek waters was announced recently by a well-known Greek scientist, reports the September 1953 *Aleia*, a Greek trade magazine. The new method, which will be revealed soon, is based on a large sponge production, and not a laboratory culture like other methods.

SPONGE-FISHING AGREEMENT WITH LIBYA: The right to engage in sponge fishing in Libyan waters was extended to Greek vessels in an agreement signed at Benghazi on July between representatives of the Greek Government and the Cyrenaica Sponge Fishing Company. The agreement will remain in effect until December 31, 1958.

The agreement provides that Greek vessels may engage in sponge fishing in Libyan waters and freely transport their catches to Greece. An annual lump-sum fee of £500 (US\$1,400) is provided for each fishing permit. There is no obligation on the part of the Greek fishing fleets to hire local personnel, and all disciplinary and administrative matters relating to crew members are to be resolved under Greek law. The Cyrenaica Sponge Fishing Company reserves the right to sign similar contracts with third parties provided the terms of such agreements are not prejudicial to the agreement signed with Greece.

In consideration for this agreement the Greek Government committed itself to resume the issuance of licenses for Libyan live meat on which there has been an embargo since the currency devaluation of April 9, 1953.

Greek sponge fishing vessels will operate under the agreement for the first time in the spring of 1954 when the new sponge fishing season begins, an October 5 U. S. Embassy dispatch from Athens reports.



Greenland

FISHERIES PRODUCTION, JANUARY-NOVEMBER 1952: The landings of fish in Greenland during the first eleven months of 1952 totaled about 13,000 metric tons (see table), reports a September 22 U. S. Embassy dispatch from Copenhagen, Denmark. The fish were bought from the fishermen by the Danish Royal Greenland Commerce.

Greenland's Fishery Products Production, January-November 1952						
Species	Landings	Produced (product weight)				
		Salted	Fillets	Dried	Frozen	Canned
..... (Metric Tons)						
Cod	11,483 ^{1/}	5,000	315	215	-	-
Wolfish (catfish) ..	750	-	235	-	-	-
Halibut ^{2/}	282	-	60	-	136	-
Salmon	6.5	-	-	-	6.5 ^{3/}	-
Shrimp	212	-	-	-	4.5 ^{3/}	36 ^{4/}
Lumpsucker roe ^{5/} ..	14	-	-	-	-	-

1/HEADLESS WEIGHT.
2/176 METRIC TONS REINHARDTIUS HIPPOGLOSSOIDES (30 FOR FREEZING, 146 FOR FILLETING), AND 106 METRIC TONS HIPPOGLOSSUS VULGARIS (ALL FOR FREEZING).
3/WEIGHT OF CLEANED SHRIMP FOR FREEZING.
4/IN 450,000 "QUARTER TINS" WITH A NET CONTENT OF 80 GRAMS (218 OUNCES) EACH.
5/SHIPPED TO COPENHAGEN FOR PROCESSING INTO CAVIAR.
NOTE: DOES NOT INCLUDE THE LANDINGS OF SALMON WHICH YIELDED 400 BARRELS OF SALTED SALMON.

The catch of cod was about normal, although direct comparison with previous statistics is not possible. For the entire 1949/50 season there were 10,052 metric tons of cod landed; for 1950/51, 13,059 tons; and for 1951/52, 11,072 tons. In 1952 there was a decline in salt-fish production despite a normal catch due to the smaller average size of the fish landed. Catches of halibut, shrimp, and wolfish held up well during 1952.

The frozen products were sold by a Government-controlled private corporation to Italy, Israel, and the United States. Quantities of halibut went to England, and much of the salmon was sent to Sweden. While salted Greenland cod was marketed during 1951 in Italy, Greece, Spain, and Portugal, the two latter countries were not buyers in 1952. Due to the unfavorable Spanish trade balance with Denmark, no Spanish import licenses were issued, although a three-million kroner export of that item had been provided in the Danish-Spanish trade agreement. Portugal was unwilling to pay acceptable prices.



Japan

1953 TUNA EXPORT QUOTA TO U. S.: It appears that the Japanese 1953 quota for canned and frozen tuna exports to the United States has been decided at 36,000 tons of frozen and 1,500,000 cases of canned tuna, according to a Japanese press report (*Nippon Suisan Shimbun*, September 10). The determination of this quota has been left entirely up to the Japanese Fishery Agency.

TUNA CANNERS DISCUSS POLICY ON EXPORTS TO THE U. S.: Prominent representatives of the Japanese canned tuna industry recently held discussions on policy of exports to the United States, reports a September 28 U. S. Embassy dispatch from Tokyo. The talks have been featured by reports of a recent visit to the United States by two leading members of the industry. The discussions and reports on the trip have been featured in Japanese fishery newspapers. Discussions on an export and sales policy of canned tuna to the United States included the following items:

1. Export of 1,500,000 cases (48 7-oz. cans) of canned tuna in 1954.
2. Exports to emphasize tuna canned in brine in preference to tuna canned in oil.
3. Japanese canners expect to compete with frozen tuna exporters in paying high ex-vessel prices for tuna, especially during the coming albacore season beginning in December.
4. Reduction in production costs to offset the expected high cost of fish. This will include an effort to reduce the cost of cans.
5. A joint plan for buying tuna for canning and in consideration of U. S. consumer market prices and other market conditions.
6. Improved financing and credit assistance to members of the canning industry.
7. The development of standard brands to avoid confusion in sales programs.
8. Continuation of the Tokyo Canned Tuna Sales Company as the principal sales outlet to Japanese exporters.
9. Establishment of a program for the more orderly marketing of Japanese canned tuna in the United States. In this connection consideration is being given to the so-called "Eckdale Plan" which would establish a joint company by Japanese-United States investments for the buying and selling of Japanese tuna imports (canned products especially) to the United States.
10. Optimism that no political action will be taken in the United States on the tuna tariff question until at least March 1954.

RESEARCH AGENT REPORTS GOOD PROSPECTS FOR EXPORTS OF FROZEN TUNA TO CANADA: The Japanese frozen tuna industry has received encouraging news from a Japanese foreign market researcher stationed in Vancouver, Canada, who reports that the prospects are good for exports of frozen tuna to that country, according to a Japanese press report (*Nippon Suisan Shimbun*, September 10). Since the demand is from canners on Canada's Pacific coast, it may be anticipated that there will be, just

as in the case of the frozen tuna trade with the United States, interference from Japan's canning industry and pressure from Canadian fishermen. The gist of the report is as follows:

The tuna catch on Canada's Pacific coast has declined extraordinarily in recent years to such an extent that the tuna schools cannot be found on the grounds at all. The Canadian Pacific Coast tuna canners are planning a policy of increasing their imports to make up for this. In 1952 they brought in 5,204,942 pounds from Japan (valued at C\$658,052), and in January and February of this year they imported 100,386 pounds (C\$13,118 worth) of frozen tuna. At present the salmon fishing season is at its height and tuna canning is inactive, but with a changeover from salmon to tuna canning in the winter, a large volume of orders is expected. At the prices set by the Japanese it is believed that imports will go right on increasing.

* * * * *

VINYL FIBER TUNA SEINE NET PROVES SUCCESSFUL: The Cremona (vinyl fiber) tuna seine net has been given credit for the success of the high-line Japanese tuna seiner Iemitsu Maru (38 tons) in the fleet operating off Fukushima and Ibaraki prefectures, according to a Japanese press report (Suisan Shuho, September 1). From last May to August 20 about 50 vessels operated in the tuna fishery in this area and the Iemitsu Maru was the most successful, landing a total of 135 metric tons, valued at 2 million yen (US\$5,500) ex-vessel.

The new net (in use since the beginning of this year) is made of all-Cremona knotless netting, and contains 10,776 pounds of No. 18 twine. The net is 500 fathoms long as hung or 740 fathoms stretched, and 120 fathoms in depth. The net was set 50 times and 13 of the sets took fish. The catch was 60 percent yellowfin and 40 percent black tuna; the biggest fish taken was about 174 pounds. The master of the Iemitsu Maru had the following to say about the Cremona net:

"The strength of the Cremona knotless is, of course, greater than that of cotton.

"Sinking speed and behavior of the net do not differ from cotton.

"Since it is not necessary to dry the net, the expense and labor of drying are saved and the number of sets is increased.

"The knotless net is all right. Before we were used to it we worried about repairing it, but we found it hardly any more trouble than with knotted net. At a set on August 18 the current was very strong, the net got tangled, the floats sank, and it was carried under the vessel where it got caught on the rudder. Only the part of the net that got hung up was damaged and the rest of it was saved. If a cotton net had got into such a mess the whole net probably would have been lost.

"Finally, with such a strong net considerable labor is saved and the captain's work is made easier. Under present conditions Cremona net is probably the best possible for tuna seines."

How long the strength of this netting will hold up is still a question. The life of a cotton net is 4 years at the most, and the average is 2 to 3 years. How long the life of a Cremona net will be is still completely unknown, but the oldest net in use now is 2 years old and its strength has not changed at all since it was made. It is said that it may be good for 5 or 6, or even 7 years.

JAPANESE GOVERNMENT



Mexico

GOOD SEASON PREDICTED FOR SINALOA SHRIMP FISHERY: A favorable shrimp season is anticipated in the Sinaloa area of Mexico, reports an October 1 U. S. consular dispatch from Mazatlan. The bay shrimp fishing season reopened in the Altata and Topolobampos districts on September 1, and in Mazatlan the opening of the deep sea shrimp fishing season was scheduled for October 1.

Approximately 107,350,000 pesos (US\$12,400,000) are invested in industrial enterprises in Mazatlan, a recent survey revealed. Mazatlan industry includes four shrimp-freezing plants with an investment of 22 million pesos (US\$2.5 million); and a shrimp fishing fleet of 130 vessels (manned by 800 men), valued at 22 million pesos (US\$2.5 million).



Mozambique

CANNED FISHERY PRODUCTS IMPORTS, 1952: Mozambique imports of canned fishery products in 1952 amounted to 942,300 pounds, valued at Escudos 8,092,500 (US\$280,000), reports an October 9 U. S. consular dispatch from Lourenco Marques. This is an increase of 10 percent in quantity and 8 percent in value as compared with 1951 imports of 852,900 pounds, valued at Escudos 7,459,400 (US\$258,000). Imports in 1950 amounted to 585,600 pounds, valued at Escudos 5,374,300 (US\$185,600).

The United States share of the canned fish market is small. It consists largely of salmon, which is popular in Lourenco Marques. However, the import control authorities are very reluctant to issue licenses for salmon since it is competitive with Portuguese canned fish. In 1952 a total of 5,400 pounds of canned fish (mostly salmon) was imported from the United States with a value of Escudos 81,600 (US\$2,800). In 1951 these imports amounted to only 1,400 pounds, valued at Escudos 11,800 (US\$400); and in 1950, 1,900 pounds, valued at Escudos 34,198 (US\$1,200).

Although the principal fish item in the Mozambique diet is bacalhau (dried cod), substantial quantities of canned tuna and sardines (all from Angola and Portugal) are also consumed. Demand for these canned items has increased considerably in recent years. Imports of canned sardines increased from 232,300 pounds in 1950 to 495,200 pounds in 1951 and 650,900 pounds in 1952. The value of canned sardine imports rose from Escudos 2,151,800 (US\$74,300) in 1950 to Escudos 4,232,200 (US\$146,200) in 1951 and Escudos 5,233,200 (US\$180,800) in 1952.

Imports of canned tuna increased from 70,900 pounds in 1950 to 115,400 pounds in 1951 and dropped to 101,300 pounds in 1952. The value of canned tuna imports rose from Escudos 913,052 (US\$31,500) in 1950 to Escudos 1,360,800 (US\$47,000) in 1951 and dropped to Escudos 1,208,185 (US\$41,700) in 1952.

The Mozambique tariff is divided into two principal categories, of which the preferential rate applies only to imports from Portuguese territory and the general rate applies to all foreign countries. The regular tax is one based on ad-valorem value and can only be changed by legislation. The supertax can be altered by executive action and is charged on the original ad-valorem value and not on the value plus the regular tax.

The tariff rates on canned fishery products are included in the Tariff Law of 1951 as revised. Prior to that time canned fish was taxed at the rate of 10 percent ad valorem, whether Portuguese or foreign.

The shortage of dollar exchange is the principal factor limiting sales of U. S. canned goods to Mozambique at present since these items fall in the luxury class. The general rule is that the Exchange Control Council will grant any dealer a total of US\$500 every six months for the purchase of U. S. groceries, cigars, and similar miscellane-

ous items. The dealer can use this sum for whatever type he wishes. One large firm is not using this allocation because it considers that it is not worth the trouble involved for so small a volume.

In addition to this system, wholesalers sometimes make an application for a permit to import from the United States provided the firm arranges its own dollars. This

Product	Preferential Ad-Valorem Tax		General Ad-Valorem Tax	
	Tax	Supertax	Tax	Supertax
	Percent	Percent	Percent	Percent
Sardine	2.75	1	11	2
Other fish & marine	5.5	1	11	2

involves the use of dollars located outside the country, but, in fact, such dollars are usually purchased from local exchange brokers.

Thus, the principal factor limiting U. S. participation is the exchange control. All merchants agree that they would purchase substantially larger quantities from the United States if exchange permits were available. One firm states that it would purchase roughly ten times its present imports. Price, however, would also be a limiting factor if exchange were available.



Norway

FISHERY PRODUCTS EXPORTS TO U. S., JANUARY-MARCH 1953: Norway's principal exports of fishery products to the United States in January-March 1953 were less than in the same period of 1952 (see table), according to a July 29 U. S. Embassy dispatch from Oslo. The main decline was in exports of frozen fillets, which were 66 percent less in quantity and 64 percent lower in value than in the first three months of 1952.

Despite the reportedly depressed market in the United States for frozen fillets, Norway expects to move sizable quantities to the United States. Norwegian authorities

Norway's Principal Exports of Fishery Products to the United States, January-March 1953 and 1952						
Item	1953			1952		
	Quantity	Value		Quantity	Value	
	Metric tons	1,000 kroner	1,000 US\$	Metric tons	1,000 kroner	1,000 US\$
Fillets, frozen .	531	1,518	212	1,545	4,228	591
Herring, salted .	1,762	2,440	341	1,190	1,505	211
Canned fishery . products	2,725	12,542	1,754	2,703	12,279	1,717

claim that Norway has been a traditional exporter of this item and that competition from the United Kingdom, Denmark, Holland, and Germany has made inroads in their trade.

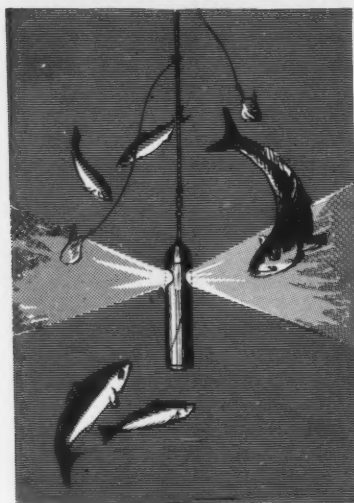
Fishing interests state that the United States market requires a special pack and they have "tailored" their operations on a long-term basis. The trade reports that Norway was not able to ship large quantities to the United States at the prevailing prices.

EXPORT MARKET OUTLOOK FOR FISHERY PRODUCTS: The marketing possibilities for Norwegian fishery products varied considerably during the first half of this year, reports the October 7 *Foreign Trade*, a Canadian Government publication. There is still a good market for herring, mainly in European countries; but the restrictions recently imposed by Brazil have created difficulties in exports of dried salted cod (klipfish) previously taken by Brazil in large quantities. During the first four months of this year,

the value of these exports to Brazil declined to 14.3 million kroner (US\$2 million) from 46.7 million (US\$6.5 million) last year. Import restrictions in other countries have also hampered the export of canned fishery products, and present stocks are large.

Exports of fishery products to the United States, however, compare well with last year; the export value for the first four months of the year totaled 17.1 million kroner (US\$2.4 million) as compared to 15.8 million kroner (US\$2.2 million) in 1952.

HAND-LINE FISHING WITH LIGHT DEVELOPED: A "Lightbeam Sinker" has been invented in Norway for the use of commercial and sport hand-line fishermen. The



ARTIST'S CONCEPTION OF
LIGHTBEAM SINKER

sinker is in the shape of a tube, containing a small battery and bulb with two small windows allowing two rays of light to escape. The light attracts the fish. Used with either ordinary baited or unbaited hooks, this sinker has produced some rather astounding results, reports the August 22 Fish Trades Gazette, a British trade magazine.

The sinker is made of polished brass and guaranteed waterproof under pressures up to 15 atmospheres (220 pounds per square inch). Patents have been applied for in many countries and a considerable number have been exported to various countries, including the United States and Canada.

The "Lightbeam Sinker" is being produced at the rate of about 10,000 per week.

WATERTIGHT PLYWOOD BARREL: A cylindrical lightweight and watertight plywood barrel has been put into production in a factory in Larvik, Norway, reports an October 15 release from the Norwegian Information Service. The barrel is the combination of

four new patents: two Norwegian, one Finnish, and one Danish. As soon as possible other factories will be established in a number of towns on the west coast of Norway and in North Norway.

Weighing one-third less than stave barrels, the new type will effect substantial freight savings. At the same time, being absolutely watertight, it is suitable for salted herring, fish and whale oils, and berries.

Initially, the barrel will be made with an inside diameter of 460 millimeters (18 inches). The height, however, can be adjusted according to the volume content desired--from 35 to 120 liter (9 to 32 gallons). Later on, as the demand expands, the barrel will be made with different diameters to hold from 20 to 200 liter (5 to 50 gallons).

DEHYDRATED WHALE MEAT: Norwegian Antarctic whaling companies are keenly interested in a new German method of dehydrating whale meat, according to the October 3 issue of The Fishing News, a British trade periodical. The method, invented by a Dr. Zimmerman, makes it possible to more effectively use whale meat.

The new process draws out the water from the whale meat. This stops all bacteria growth and improves the quality of the meat, according to the inventor. The whale-oil taste disappears, and further processing, such as freezing, becomes unnecessary. The water is replaced by some kind of stabilizing fat, the consistency of which is a factory secret. The weight of the meat is reduced by about 70 percent.

Dehydrated whale meat can be shipped by ordinary freight resulting in savings in transportation and handling costs.



Seychelles

SURVEY REVEALS RICH FISHING GROUNDS IN INDIAN OCEAN: Large untouched fishing areas exist in the western part of the Indian Ocean, according to a report by the officers of the Mauritius-Seychelles Fishery Survey. This survey for two years has investigated the possibility of exploiting the fisheries of that area on a commercial scale. Reports indicate that fishing by hand lines yielded hourly catches equal to the average efforts of trawlers on some of the richer fishing grounds in Europe. The project was financed by a research grant under the British Colonial Development and Welfare Acts, reports the September 1953 South African Shipping News and Fishing Industry Review.

The two scientists sailed about 28,000 miles in a motor-driven 70-foot Scottish drifter on the survey. The fishing grounds discovered are on a chain of oceanic banks scattered east of Africa in the Indian Ocean. They rise steeply out of deep water and are located at a depth of about 30 fathoms.

The report issued on the survey gives an account of marine life in the depths of the Indian Ocean. It includes descriptions of fishing grounds around the little-known remote islands of the Indian Ocean; comprehensive notes on fishing gear; marketing of fish; sharks; turtles; the problems of poisonous fish; and meteorology. It also reveals there is a fishable area of 7,500 square miles within three days' steaming of the Seychelles.



Spain

LARGE FREEZER AND STORAGE PLANT BUILT: The largest and most modern freezing and cold-storage plant in Spain has been built on the Marques de Comillas pier in Cadiz, reports an October 6 U. S. consular dispatch from Seville. The plant is about ready to start operations and its greatest value is expected to be for the freezing and storage of fish and shellfish for subsequent export. This plant, said to be the first of a series, has completely modern deep-freeze installations.

The plant is operated by the Spanish Government corporation Industrias Gaditanas del Frio Industrial, S. A. It has taken three years to build and cost 45 million pesetas (US\$2 million).

The plant is a five-story building, 98 feet high, covering an area of 25,724 square feet, with a storage capacity of 3,600 metric tons by weight. It has cold-storage space for temperatures of 4° C. (39° F.) and frozen storage space for temperatures of -18° C. (-0.4° F.). In addition, it includes an ice factory with a potential production of 75 metric tons a day and with ice storage space of 1,100 metric tons.

The fact that the Zona Franca (or Free Zone) is part owner of the plant suggests that it will be possible for all kinds of food products to be brought to Cadiz for freezing or for cold storage, and to be reexported from Spain without being subject to Spanish customs formalities. Likewise, customs arrangements for importation into Spain could be completed long after the goods had been brought into the plant, processed, and stored. This is expected to be the case despite the fact that the plant is not inside the Free-Zone enclave, which is about two kilometers away.

Several American fish-importing firms are known to be interested in utilizing the facilities of the freezing plant in the near future. One firm has been importing shrimp from a firm in Huelva. The shrimp were frozen in Huelva and taken by refrigerated

truck to Cadiz, as vessels with refrigerated chambers do not call at Huelva. With this modern freezing and frozen storage plant on the pier at Cadiz, shrimp fishing enterprises will have a convenient center of operations, readily accessible to shipping lines.

The manager of the firm also reports that he has been visited by representatives of several other American firms which are interested in making contracts for the purchase of frozen fish, either direct from the IGFISA or through established commercial fishing companies.

There are Spanish fishing companies operating out of many ports along the coast which may be expected to make use of the IGFISA plant. These include those whose present headquarters are at Ayamonte, Huelva, Barbate, and Algeciras, as well as the smaller fishing villages on the Bay of Cadiz. The waters of the southwestern Spanish coast are rich in seafood, and it is predicted that this modern freezing plant will make it possible to increase the catch considerably with existing facilities. Under present circumstances, there are more fishing fleets than the present Spanish market can productively support. Persons familiar with fishing operations say they do not feel that the Spanish fishing industry offers a particularly fertile field for foreign capital investment, as the present owners are in a position to expand their fleets and increase operations considerably without foreign capital assistance.

FISH CANNING TRENDS IN VIGO DISTRICT, SEPTEMBER 1953: Fish-canning activities in the Vigo District of Spain were reported to have continued favorable during September, reports an October 9 U. S. consular dispatch from Vigo. Due to the scarcity of sardines, canners substituted a species of needlefish called "alcrique," which is said to look and taste like sardines and to be in great demand in the domestic market because of its low retail price.

The fish catch sold over the Vigo Fish Exchange during September was greater than the previous month due to the arrival of large schools of palometa (needlefish) along the Galician shore. Catches would have been even larger but for reported coal shortages which hampered the vessels. Profits, however, were claimed to be too small for any effective replacement of materials and equipment. The fishing industry is said to be renewing its demand for Government assistance through the reduction of coal and fuel oil prices.



United Kingdom

MOBILE FISH-MEAL PLANTS IN SCOTLAND: Mobile fish-meal and fish-oil plants for coastal areas of the Highlands in Scotland have been recommended by the Scottish Board for Industry, reports The Fishing News of September 12, a British trade Journal. These mobile plants have been reported as successful in Canada. This type of plant would be cheaper than the permanent brick structures, and they would follow the fisheries as mobile sawmills follow timber felling.

GREENLAND COAST SURVEY FOR NEW TRAWLING GROUNDS: A survey of certain fishing grounds off the coast of Greenland in search of new trawling grounds is being sponsored by the White Fish Authority, according to The Fishing News, (a British trade magazine) of September 12, The Greenland area has become increasingly important to British distant-water trawlers due to the closure of other grounds. The survey was due to begin early in October and last about 60 days. The cost is estimated at about £16,000 (US\$44,800).

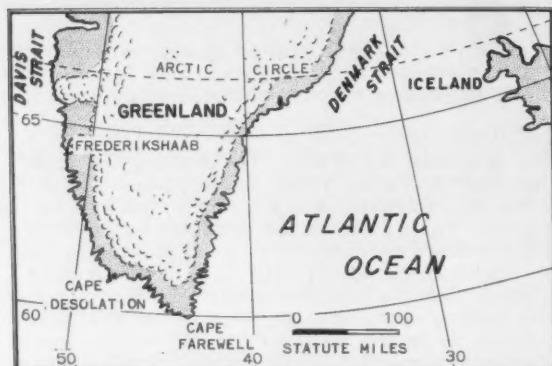
A request that a hydrographic survey should be made in order to improve the detail of the bottom topography shown on Admiralty charts was initially put forward by the

British Trawlers' Federation. It was discussed by the White Fish Authority, the Ministry of Agriculture and Fisheries, and the Hydrographic Department of the Admiralty.

As a result, the Admiralty agreed to lend specialist hydrographic personnel together with technical equipment, on the assumption that a suitable vessel will be made available and provided with the necessary depth-finding and position-finding equipment.

For the survey, the Authority proposes to charter the S. T. Sletnes, a Grimsby trawler. The vessel is a large modern trawler, 180 ft. long, and carries the necessary equipment.

The first area to be explored by systematic lines of soundings will be the coastal shelf from the limit of



territorial waters out to the 200-fathom line on the southwest coast of Greenland, from the longitude of Cape Farewell to the latitude of Cape Desolation.

About one quarter of the cost will be provided by the Ministry of Agriculture and Fisheries, and in addition there will be the specialist assistance given by Admiralty personnel. The rest of the cost will be borne by the Authority and by contributions from trawler owners.



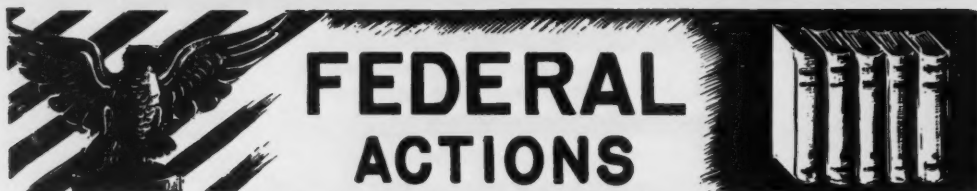
25,000 FISH RETAILERS IN GREAT BRITAIN

DO YOU KNOW:

That in 1950 there were 17,000 fried fish shops in Great Britain that did an annual business of £33 million (US\$92.4 million); 8,527 fishmongers and poulterers with sales of £56.8 million (US\$159 million), according to the Census of Distribution and Other Services, 1950, a British Government survey report on retail and service trades. No fewer than 4,399 greengrocers out of a total of 35,236 were listed as also selling fish.

In the Greater London area in 1950 there were 1,914 fishmonger establishments whose sales totaled £16.3 million (US\$45.6 million). These shops employed 6,823 persons who received £1.4 million (US\$3.9 million) in wages and salaries.

The survey also revealed that part-time workers play a large part in almost all British retail and service trades, including fried fish shops. A high proportion are family helpers assisting in "one-man" businesses.



Civil Service Commission

FISHERY BIOLOGIST EXAMINATION ANNOUNCED: An examination for Junior Agricultural Assistant (GS-5, \$3,410 a year), which includes an option on Fishery Biology, was announced by the U. S. Civil Service Commission on October 14, 1953 (Announcement No. 382). The register established from this examination will be used to fill positions in the Department of Agriculture and in the Department of the Interior in Washington, D. C., and throughout the United States. The closing date for this examination was December 1, 1953.



Department of the Interior

REGULATIONS FOR GEOLOGICAL AND GEOPHYSICAL EXPLORATIONS IN OUTER CONTINENTAL SHELF: These regulations for geological and geophysical explorations were issued by the Department of the Interior and published in the Federal Register of September 23, 1953:

Pending the issuance of regulations governing geological and geophysical explorations in the Outer Continental Shelf, pursuant to sec. 11 of the Outer Continental Shelf Lands Act of August 7, 1953 (67 Stat. 462), and in those areas where the Secretary has entered into a cooperative agreement with the appropriate supervisory agency of the adjoining State covering the protection and conservation of aquatic life and notice thereof has been published in the FEDERAL REGISTER,¹ any person, as defined in section 2 (d) of the act, is hereby authorized to conduct geological and geophysical explorations in the Outer Continen-

¹ Pursuant to the provisions of the foregoing notice a cooperative agreement has been entered into with the Commissioner of the General Land Office, State of Texas.

tal Shelf upon condition (1) that he has a permit for such explorations covering adjoining State areas from the appropriate supervisory agency of the State, (2) that he has obtained appropriate permission for such explorations from the Corps of Engineers, Department of the Army, and (3) that, for the protection and conservation of aquatic life, he complies with the requirements of the statutes and regulations of the adjoining State governing the methods of and restrictions upon geological and geophysical explorations in the submerged lands of such adjoining State, which statutes and regulations are hereby adopted as the regulations of the Secretary of the Interior applicable to the Outer Continental Shelf.

The enforcement of the regulations hereby adopted is delegated to the appropriate Regional Oil and Gas Supervisor of the U. S. Geological Survey, and he may accept the assistance of the adjoining States in the enforcement of the said regulations. This general authorization to conduct geological and geophysical explorations is subject to termination upon not less than 60 days' notice published in the FEDERAL REGISTER, and the authorization to conduct such explorations may be terminated as to any person upon reasonable notice.

Dated: September 17, 1953.

ORME LEWIS,
Acting Secretary of the Interior.



Department of State

U. S. SUPPORTS JAPAN'S APPLICATION FOR PROVISIONAL ASSOCIATION WITH GATT: The Government of the United States strongly supports the application of Japan for provisional association with the General Agreement on Tariffs and Trade, stated Samuel C. Waugh, U. S. Assistant Secretary of State on September 23 before the 8th Session of Contracting Parties at Geneva, Switzerland.

The Assistant Secretary stated in part: "In our view a point has been reached where it is no longer fair, practical or wise to continue to deny to one of the largest trading nations of the free world the right to participate in our councils and share with us the administration of our common rules of equitable trade...."

"Japan... has clearly stated its awareness of the problems which some governments have felt would be created by its admission to the General Agreement. It has endeavored to meet these problems in various ways, and has, in particular, indicated its willingness to confine its admission to the General Agreement at this time to a provisional and temporary association. It seems to us that this should go far toward dispelling the fears expressed by some countries with respect to undertaking permanent commitments before the expiration of the present period of transition and review.

"Moreover, the General Agreement already contains a number of safeguards against injuries arising from trade developments...

"Turning to the obligations which would be placed upon Japan under the proposed arrangement, it is fair to say that the suggested Japanese tariff commitments are substantial. Although they consist only of bindings of duty, nevertheless they represent an undertaking affecting almost the whole of the Japanese tariff. In addition, of course, Japan would be obligated to carry out the general provisions of the Agreement, and this should be in the interest of all those who have expressed fears as to the possible revival of the Japanese commercial practices and policies of the pre-war era.

"Mr. Chairman, my Government firmly believes that the admission of Japan on a provisional basis is urgent, that the arrangement proposed is both equitable and wise and that Japan is deserving of this recognition by the Contracting Parties. It is our earnest hope that the governments here represented will find it possible to join with the United States in giving this proposal their support."

EIGHTH SESSION OF CONTRACTING PARTIES TO GATT: The Eighth Session of the Contracting Parties to the General Agreement on Tariffs and Trade was held in Geneva, Switzerland, from September 17 to October 24. The meeting took place against the background that a number of important trading countries are presently engaged in reviewing their international trade policies. A summary of the items discussed of importance to the fisheries, as contained in an October 27 U. S. State Department release, follows:

Japan to Participate on Provisional Basis: An important accomplishment was the decision to permit Japan to participate on a provisional basis in future deliberations of the Contracting Parties. In addition, various countries, including the U. S., agreed with Japan that their commercial relations would be governed by the provisions of the Agreement.

During the Session the groundwork was laid for further progress toward the achievement of the aims of the General Agreement. In this connection the Contracting Parties took a decision looking toward a review of the operations and provisions of the General Agreement in the latter part of 1954.

Extension of Assured Life of Schedules: One of the most important items on the agenda related to the fact that after January 1, 1954, countries could, through the use of Article XXVIII of the Agreement, withdraw or modify individual tariff concessions. The only obligation would be to engage in negotiations for the purpose of arriving at compensatory concessions for such withdrawals or modifications. If such negotiations should fail, the country could, nevertheless, go ahead and make the proposed changes. In such an event, affected countries could retaliate by withdrawing or modifying equivalent concessions.

The Contracting Parties, therefore, decided that it would be desirable to postpone the applicability of Article XXVIII until July 1, 1955, or for

18 months. A declaration to this effect was prepared and signed in Geneva by a number of countries, including the U. S., on October 24, the opening day for signatures. The declaration remained open for signature by other Contracting Parties until December 31, 1953. The declaration provided that Article XXVIII would apply fully with regard to concessions initially negotiated with countries not signing it.

Reduction of Tariff Levels: As a result of intensive analysis and examination by technical experts at various meetings held during the last two years, the French plan for the reduction of tariff levels reached an advanced stage of technical development. Since the plan now appears to be technically feasible, the Contracting Parties decided to refer the plan, as revised, to their respective governments for their consideration and comment. The United States Delegation indicated that the plan would be sent to the Commission on Foreign Economic Policy as an illustration of a line of thinking and a possible approach to the problem of tariff reduction.

In broad outline, the revised French plan would provide that the import trade of participating countries would be divided into a number of sectors, say 10 or 15, and that the average tariff rates within each sector would be reduced by 10 percent in each year for the first three years of the plan. The choice of items for reduction within any sector would be at the discretion of each participating

country, except that rates above a certain prescribed level (ceiling rates) must be reduced to that level. Special relief from the mandatory commitment to reduce the high rate on any specific product to this prescribed level could be granted by the participating countries. Under the plan no reduction would be required in any sector whose average rate was below a prescribed level (floor rates) except that in such a sector any individual rate above the ceiling must be reduced to the ceiling. Fiscal duties could be excluded from the plan, and countries in the process of economic development would not have to make reductions affecting their development programs.

Balance-of-Payments Consultations: The Contracting Parties conducted consultations under Article XII:4 (B) and XIV:1 (g) of the General Agreement with Australia, Ceylon, Chile, Finland, Pakistan, Sweden, Southern Rhodesia, and the United Kingdom. In these consultations the Contracting Parties had the benefit of information developed during the consultations of these countries with the International Monetary Fund.

Representatives of the consulting governments discussed freely all aspects of their import restrictions. Information previously furnished concerning the restrictions and their discriminatory application were analyzed. These representatives took full note of the views expressed by the other Contracting Parties, and indicated that these views would be conveyed to their respective governments for sympathetic consideration.

The Netherlands representative announced that owing to satisfactory developments in their balance-of-payments and monetary reserve position his government had decided to relax its restrictions on imports from the dollar area. The representative of South Africa announced that after January 1, 1954, South Africa import restrictions would be administered on a completely nondiscriminatory basis.

In conducting this year's consultations the Contracting Parties arrived at certain general conclusions. A marked improvement in the world dollar situation in the past year was noted. Although this improvement was due in part to temporary and artificial factors, including continued restrictions against dollar imports and heavy U. S. offshore purchases and military and other expenditures abroad, more fundamental causes appeared to be in operation. Some of these more fundamental factors gave promise of enduring. If this should prove to be the case, the Contracting Parties believe the conditions would exist for advancing towards a system of international trade free from restrictions and discrimination imposed for financial reasons. Unfortunately, the Contracting Parties could not report universal improvement. Some countries, among them countries dependent on production and export of primary commodities, have in fact experienced a deterioration in their external financial position during the year under review.

Valuation, Nationality, and Consular Formalities: Resolutions of the International Chamber of Commerce on the valuation of goods for customs purposes, nationality of imported goods, and consular formalities were considered. Simplification and standardization of methods of determining valuation and nationality of goods, as well as efforts to minimize consular formalities, have long been the subject of both national and international concern. Methods of valuation currently used by the Contracting Parties were given preliminary examination and it was agreed that work in this field should be carried on through intersessional machinery. A report on national regulations in effect with respect to the determination of nationality was also studied and a proposed standard definition of nationality was prepared for the consideration and comments of the Contracting Parties prior to the next session. Note was taken of the action by the individual Contracting Parties designed to carry out recommendations of the 1952 session calling for the gradual reduction of consular formalities with a view to their elimination by December 31, 1956.

Complaints: The Contracting Parties dealt with a number of complaints against actions held to be inconsistent with the letter or spirit of the Agreement. Several of them concerned actions taken by the United States in restricting imports or subsidizing exports.

The French delegate agreed that a French tax on imports and exports was inconsistent with the Agreement and informed the Contracting Parties to their satisfaction that the French Government had decided to allow this tax law to expire at the end of 1953.

The Norwegian and German delegations announced that they had resolved their dispute, concerning the alleged discriminatory treatment of Norwegian sardines, through consultations recommended by the Contracting Parties at the last session.

Tariff Modifications: Due to the political difficulty for the United Kingdom of imposing duties on products from within the Commonwealth which are free of duty, the United Kingdom was granted a waiver permitting, under certain circumstances, increases in duties applicable to products of other Contracting Parties, on which tariff concessions are not now in effect, without requiring the imposition of duties on like Commonwealth products. Procedures were provided for in order to prevent the waiver from applying in any case where the increased preference would result in a substantial diversion of trade to preferential suppliers.

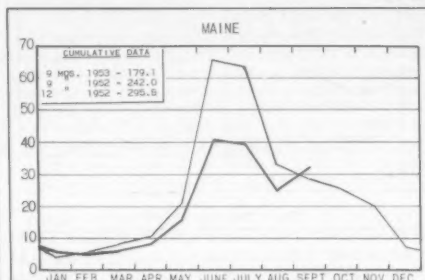
Time of Next Session: The next session was tentatively set for October 14, 1954, at Geneva. It was understood that the review of the GATT referred to above would form a part of the ninth regular session. However, if circumstances force the delay of the review until after 1954, the ninth session will still be held on October 14, 1954.



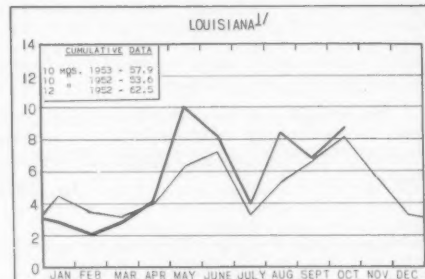
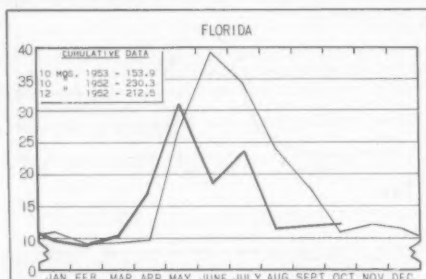
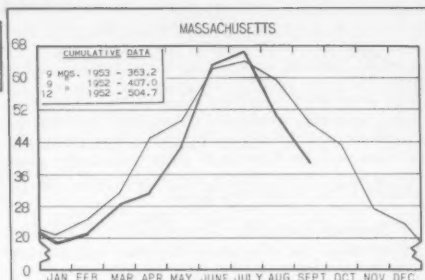
FISHERY INDICATORS

CHART 1 - FISHERY LANDINGS for SELECTED STATES

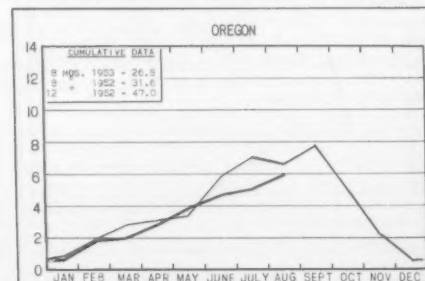
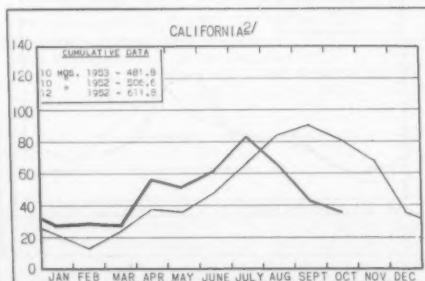
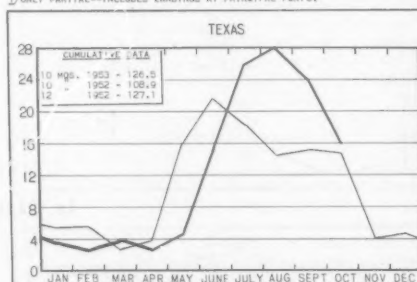
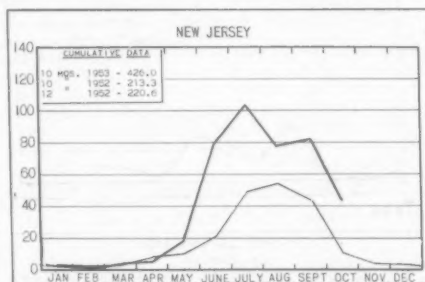
In Millions of Pounds



Legend:
— 1953
--- 1952



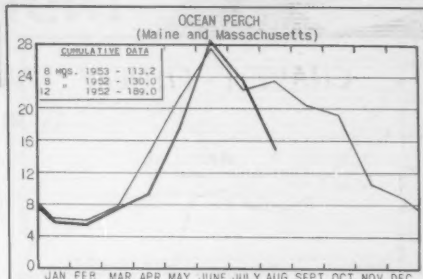
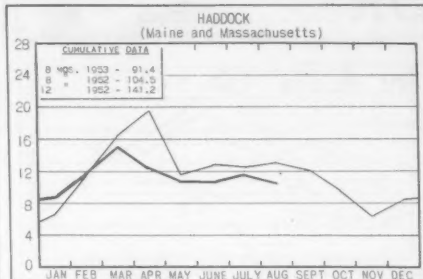
^{1/}ONLY PARTIAL--INCLUDES LANDINGS AT PRINCIPAL PORTS.



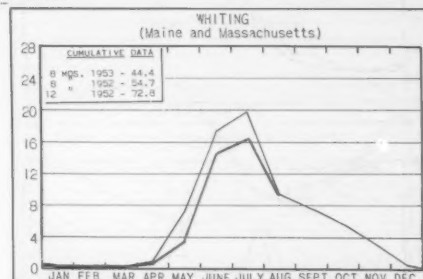
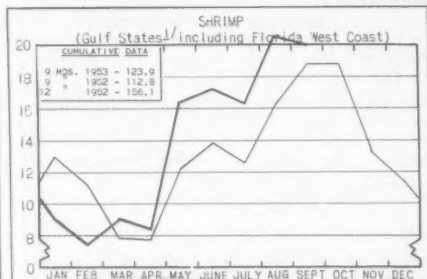
^{2/}ONLY PARTIAL--INCLUDES PRODUCTION OF MAJOR FISHERIES AND MARKET FISH LANDINGS AT PRINCIPAL PORTS.

CHART 2 - LANDINGS for SELECTED FISHERIES

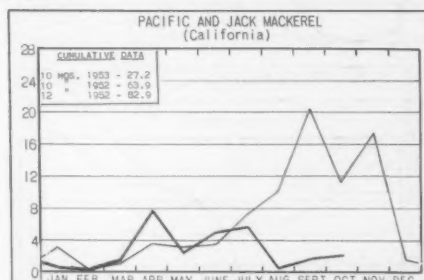
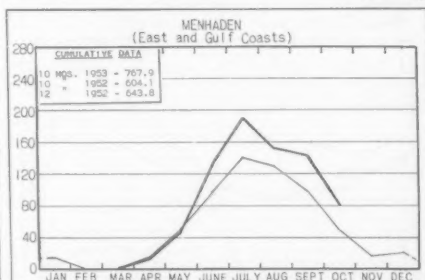
In Millions of Pounds



In Millions of Pounds



In Thousands of Tons



In Thousands of Tons

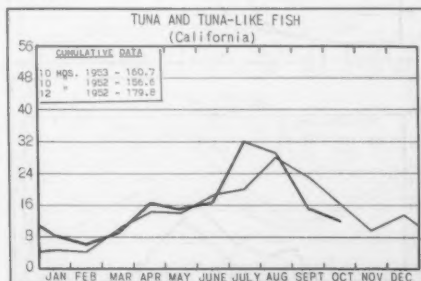
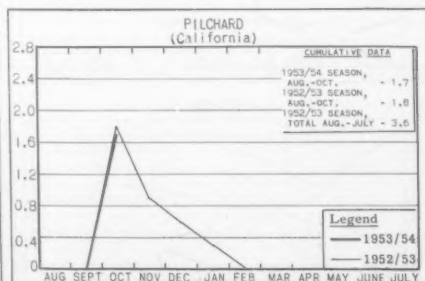
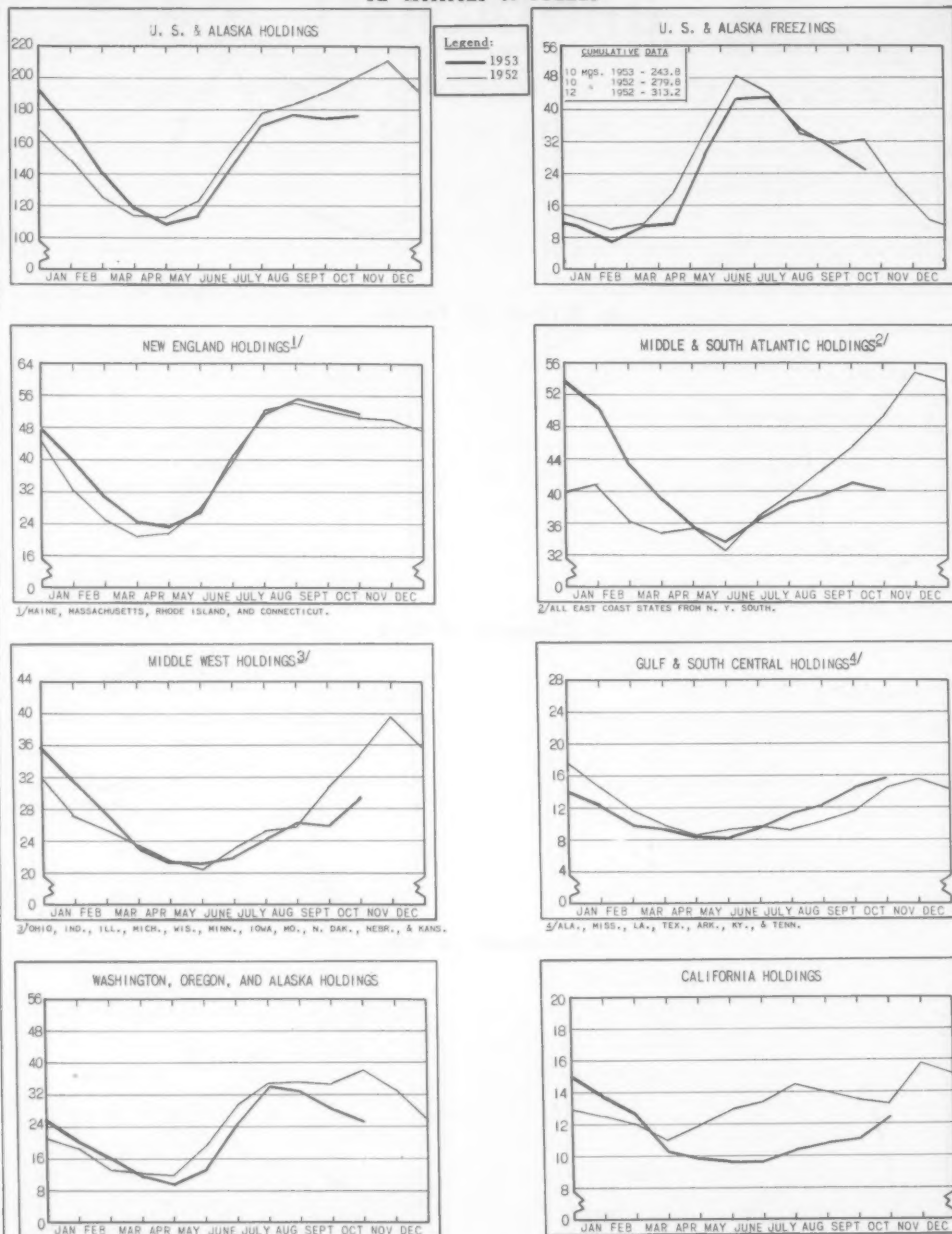


CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

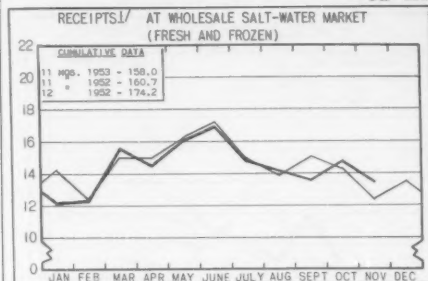
In Millions of Pounds



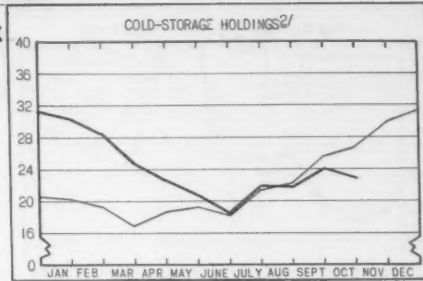
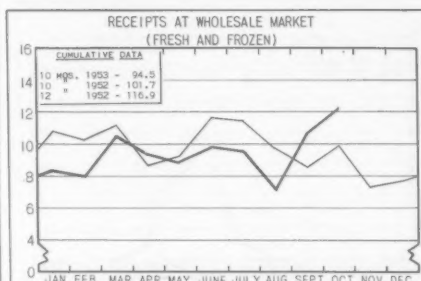
*Excludes salted, cured, and smoked products.

CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

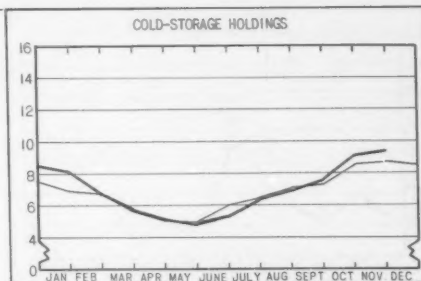
In Millions of Pound

^{1/}INCLUDE TRUCK AND RAIL IMPORTS FROM CANADA AND DIRECT VESSEL LANDINGS AT NEW YORK CITY.

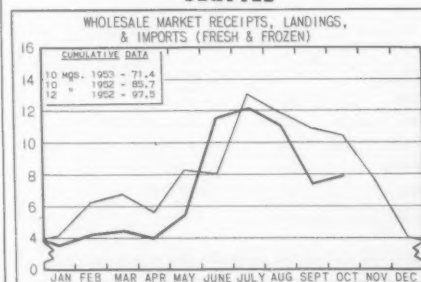
NEW YORK CITY

^{2/}AS REPORTED BY PLANTS IN METROPOLITAN AREA.

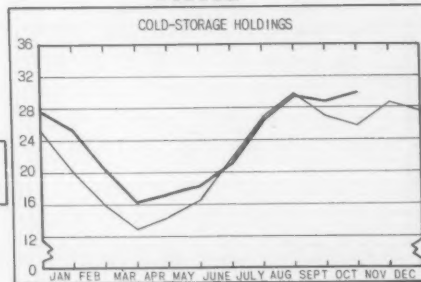
CHICAGO



SEATTLE



BOSTON



Legend

— 1953

- - - 1952

CHART 5 - FISH MEAL and OIL PRODUCTION - U.S. and ALASKA

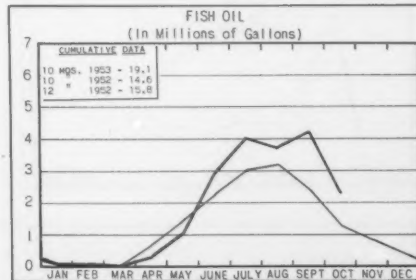
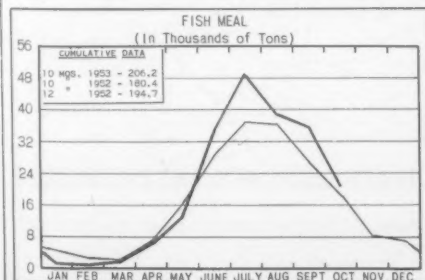
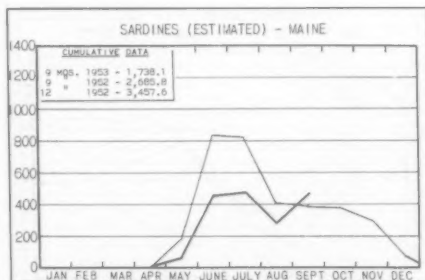
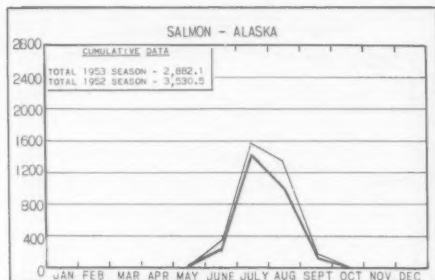
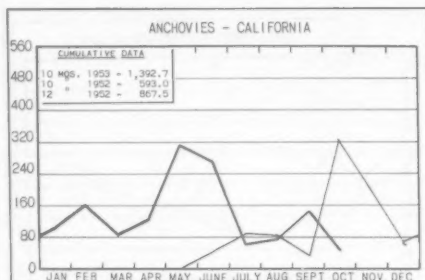
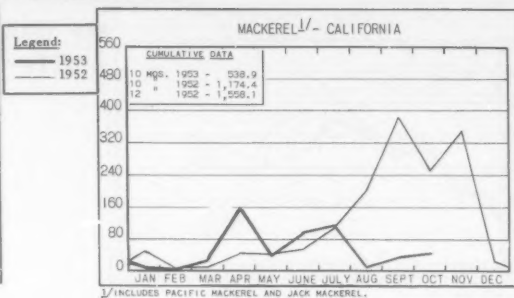
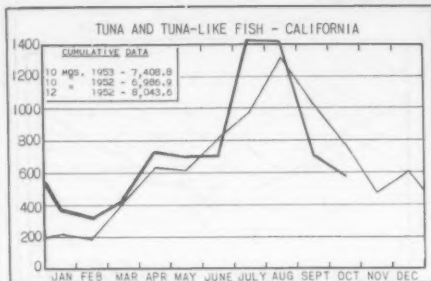


CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

In Thousands of Standard Cases



STANDARD CASES

Variety	No.Cans	Can Designation	Net Wgt.
SARDINES	100	4 drawn	3 1/2 oz.
SHRIMP	48	—	5 oz.
TUNA	48	No. 1/2 tuna	6 & 7 oz.
PILCHARDS	48	No. 1 oval	15 oz.
SALMON	48	1-pound tall	16 oz.
ANCHOVIES	48	1/2 lb.	8 oz.

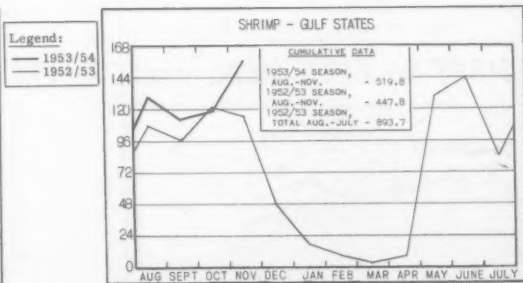
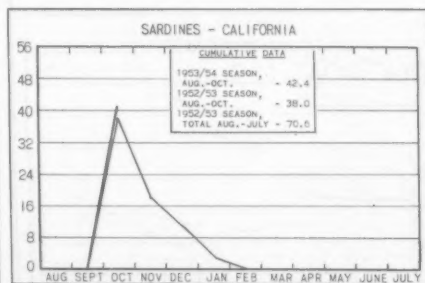
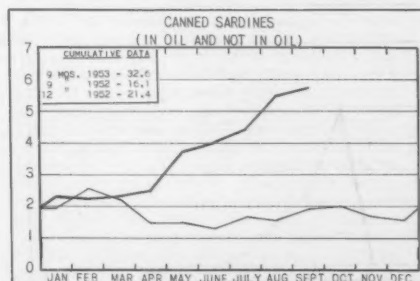
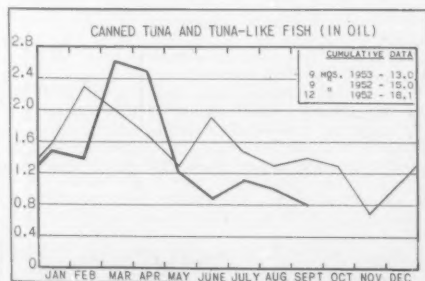
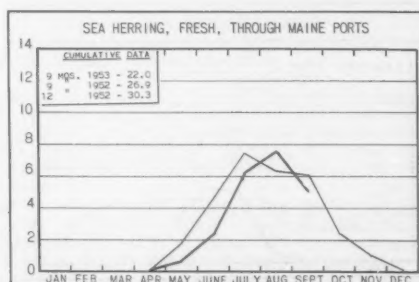
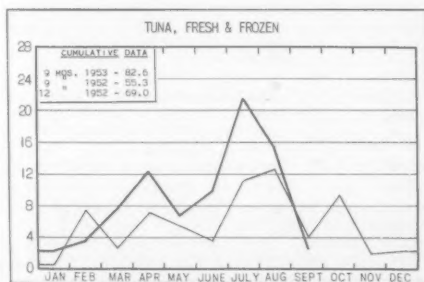
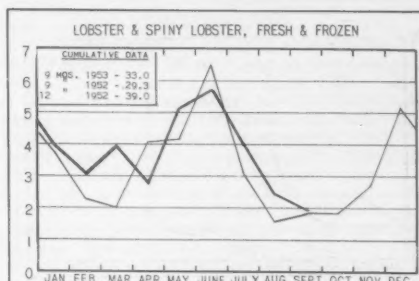
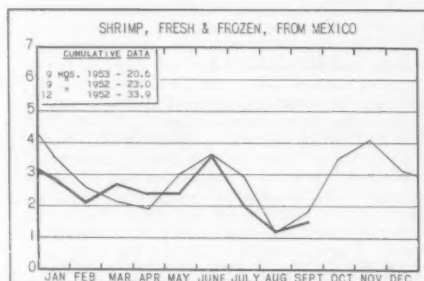
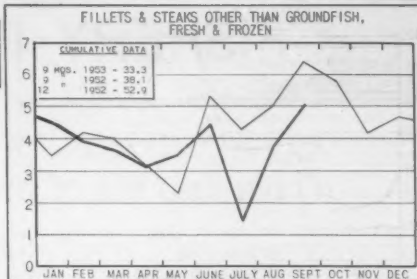
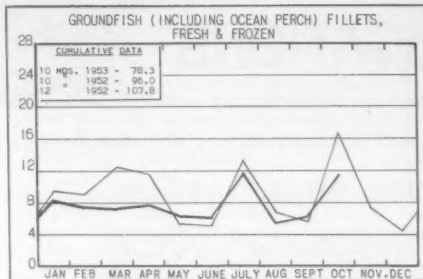
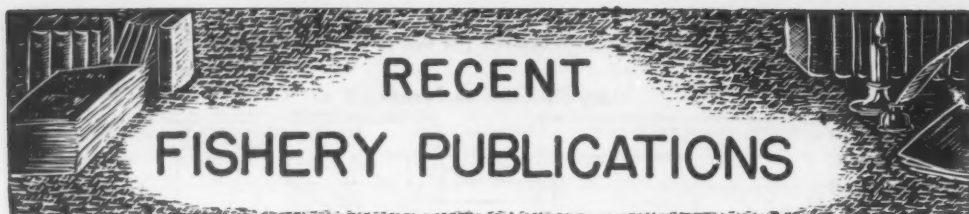


CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds





RECENT FISHERY PUBLICATIONS

Recent publications of interest to the commercial fishing industry are listed below.

FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES AND ALASKA.
FL - FISHERY LEAFLETS.
SSR.-FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).
SEP.-SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

Number	Title
CFS-924	- Frozen Fish Report, October 1953, 7 p.
CFS-928	- Fish Meal and Oil, September 1953, 2 p.
CFS-930	- Texas Landings, September 1953, 2 p.
FL -412	- Menhaden Industry--Past and Present, 17 p.
Sep. No. 358	- Tuna Fishing at Tahiti.
Sep. No. 359	- Deep-Water Trawling Survey Off the Oregon and Washington Coasts (Aug. 25-Oct. 3, 1952).
Sep. No. 360	- Progress on Fishery Technological Research Projects, Fiscal Year 1953. Program for Fishery Technological Research, Fiscal Year 1954. Reports Published During Fiscal Year 1953 on Specific Phases of Fishery Technological Research.

SSR-Fish. No. 98 - Longline Fishing for Deep-Swimming Tunas in the Central Pacific, 1950-51, by Garth I. Murphy and Richard S. Shomura, 50 p., illus., processed, May 1953. This is an interim progress report on one phase of a group of investigations designed to insure the maximum development and utilization of the high-seas fishery resources in the central Pacific. Considered are the first results of a long-line fishing survey not yet completed. Includes a description of long-line fishing, horizontal distribution of deep-swimming tunas, vertical distribution, size composition and sex ratios of the tuna, and possibilities of commercial exploitation.

THE FOLLOWING SERVICE PUBLICATIONS ARE FOR SALE AND ARE AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C.

Alaska's Fish and Wildlife, by Clarence J. Rhode and Will Barker, Circular 17, 64 p., illus., printed, 25 cents, 1953. This is primarily a reference handbook for newcomers to the Territory. School children will also find the booklet of value in their study of Alaska and its resources since it includes checklists of the more representative fish and wildlife species. It points out the importance of the renewable fish and wildlife resources to the economy of the Territory and emphasizes the need for protecting and managing them properly. In addition to the descriptions of Alaska's big game, fur animals, birds, and fishes, and the localities where found, the publication contains a number of illustrations.

Check List of Philippine Fishes, by Albert W. Herre, Research Report 20, 978 p., printed, \$2.25 (paper cover), 1953. A knowledge of the number and kinds of fishes that comprise the fauna is indispensable to any program designed to explore or develop commercial fisheries, or to further the knowledge of the fishery resources as a basis for their conservation and management. Therefore, this check list of Philippine fishes was prepared as a fundamental item of the Service's Philippine Fishery Program. It lists approximately 2,145 species of the fishes known to inhabit the waters of the Philippines as of May 1, 1948. A number of additional species taken a few miles outside the political boundaries of the Philippines are listed but are not in-

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cluded in the approximation as they have not yet been taken within the nominal limits of the archipelago. In all probability, according to the author, the Philippine fish fauna totals about 2,400 species. In this list are given the names of all known species of fish which inhabit the waters of the Philippines, as many of the common names for each species as have been obtainable, the known geographic distribution of each species, the more important references for each fish listed, and those synonyms about which there was no doubt.

Common Tuna-Bait Fishes of the Central Pacific, by Fred C. June and John W. Reintjes, Research Report 34, 57 p., illus., printed, 20 cents, 1953. The pole-and-line fishery for tunas is dependent upon an adequate supply of live bait for use as chum to attract and hold schools of fish. The present work is designed for the practical field identification of the more common tuna-bait fishes found in the central Pacific region, which for purposes of this report includes the waters surrounding the Hawaiian, northern Line, and Phoenix Island groups. Presented are illustrated keys to the families and species, with descriptions and notes on distribution, and an evaluation of the tuna-bait resources of the central Pacific region with a description of each potentially important baiting area. An index of scientific, English, Hawaiian, and Gilbertese names of the various fishes considered concludes the report.

Estimation of Growth Rate in Animals by Marking Experiments, by Milton J. Lindner, Fishery Bulletin 78 (From Fishery Bulletin of the Fish and Wildlife Service, Volume 54), 7 p., illus., printed, 10 cents, 1953. Describes a method for estimating growth of animals of unknown ages. Tag and recapture data over a relatively short period of time may be used to determine, graphically and analytically, the growth characteristics of animals whose ages are unknown. An example utilizes shrimp-tagging data.

Fecundity of Hudson River Shad, by Burton A. Lehman, Research Report 33, 11 p., illus., printed, 10 cents, 1953. Describes a study of the fecundity of the shad (*Alosa sapidissima*) which was undertaken in 1951 to supply information to the Atlantic States Marine Fisheries Commission for fishery regulations along the Atlantic coast. The generally accepted figure for the annual egg production of the shad has been 25,000 to 30,000. In this study, the fecundity of 22 shad taken from the Hudson River in April 1951 ranged from 116,000 to 468,000 ova, depending on the age and size of the fish. The number of eggs that could be taken by spawntakers for hatchery purposes at any one time has generally been accepted as the total number of eggs a shad could produce in a season. Since only a part of the eggs are ripe and ready for spawning at one time, these earlier records represent but a fraction of the number of ova actually produced during a spawning season.

Food of Yellowfin Tuna in the Central Pacific, by John W. Reintjes and Joseph E. King, Fishery

Bulletin 81 (From Fishery Bulletin of the Fish and Wildlife Service, Volume 54), 23 p., illus., printed, 20 cents, 1953. This study is based on the quantitative analysis of the stomach contents of 1,097 yellowfin tuna (*Neothunnus macropterus*) taken in the central Pacific in 1950 and 1951. The fish were captured by three fishing methods, trolling, pole-and-line, and long line; came from varying habitats, inshore and offshore, surface and subsurface; and were of different size groups. The results show that the yellowfin accepts a great variety of animal food from plankton to large fish and squid. Of the total volume of food remains, 47 percent was fish, 26 percent squid, and 25 percent crustaceans. A total of 38 fish families and 11 major invertebrate groups was represented. Composition of the food varied considerably with size of yellowfin and locale of capture, whether surface or subsurface, near shore or offshore. Comparison of the average volumes of stomach contents indicated that yellowfin from offshore areas contained as much food in their stomachs as those captured just off the reef; and those from subsurface levels as much as those from the surface. Feeding took place during daylight hours. Yellowfin captured in the zone of high zooplankton abundance near the equator contained greater amounts of food in their stomachs than those captured at more northerly or southerly latitudes. Since most elements of the pelagic fauna appear to be acceptable as food, distribution and abundance of the yellowfin is probably determined not by the occurrence of any specific food items but rather by the total amount of food organisms present in the area. Material collected in 1950 and 1951 during 12 cruises of the *Hugh M. Smith*, *John R. Manning*, and *Henry O'Malley* in waters surrounding the Line and Phoenix Islands was available for this investigation.

Nature of Variability in Trawl Catches, by Clyde C. Taylor, Fishery Bulletin 83 (From Fishery Bulletin of the Fish and Wildlife Service, Volume 54), 25 p., illus., printed, 20 cents, 1953. A fundamental problem in deriving the characteristics of a population from a series of samples is the determination of the magnitude and sources of variability in successive samples. Such variability may arise (1) from the manner in which the population is distributed in space and (2) from variations inherent in the method selected for sampling. This paper considers the variability associated with catches of fish by the otter trawl with respect to such sources. The data used in this study were collected on Georges Bank during the summers of 1948-51 by the research vessel *Albatross III*.

Zooplankton Abundance in the Central Pacific, by Joseph E. King and Joan Demond, Fishery Bulletin 82 (From Fishery Bulletin of the Fish and Wildlife Service, Volume 54), 37 p., illus., printed, 25 cents, 1953. The investigation described in this report considers the quantity of zooplankton, one of the two main constituents of the total plankton crop, and its relation to certain physical and chemical factors in the central Pacific environment. An analysis of

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variance of zooplankton volumes demonstrated significant differences between day and night hauls, between cruises, and among latitudes but not between longitudes. The greatest abundance, both by number and volume, of zooplankton occurred in the region of the equator. The rich zone, extending from about 6° N. to 5° S. latitude, supported populations three to four times as great as more northerly or southerly latitudes. The greatest concentrations were found north of the equator, when related to a "convergence;" when no marked convergence existed the peak of abundance was displaced a few degrees southward. The abundance

of zooplankton was correlated with inorganic phosphate, oxygen, temperature, and thermocline depth. These environmental factors are influenced by upwelling associated with the equatorial divergence, which replenishes the supply of nutrients in the euphotic zone and creates favorable conditions for the growth of plant and animal life. While the data presented do not give a measure of the rate of production, they do provide a useful index to the relative productivity of different areas of the central Pacific. Zooplankton abundance in the central Pacific was investigated on four cruises of the Hugh M. Smith in 1950 and 1951.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE AGENCIES ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE AGENCIES OR PUBLISHERS MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

A Bibliography of the Indian shad, HILSA ILISHA (Hamilton), by S. Jones, 11 p., printed. (Reprinted from Journal of the Zoological Society of India, vol. 4, no. 1, pp. 89-99, June 1952). Central Inland Fisheries Research Station, Barrackpore, via: Calcutta, India. A list of publications on the Indian shad, a food fish of prime economic importance. A subject index is also included.

(California) Statistical Report of Fresh and Canned Fishery Products (Year 1952, Sardine Season 1952-1953), Circular No. 27, 19 p. (mostly tables), printed. Marine Fisheries Branch, Department of Fish and Game, San Francisco, Calif., 1953. The tables in this publication show the California commercial landings of all fish and shellfish by species and by main fishing areas; fishery products shipments into the State; a list of canning and reduction plants (plants primarily processing sardines, tuna, mackerel, and squid); production of canned, cured, and manufactured fishery products and byproducts (including fish meal and oil); and historical data.

(Canada) Fisheries Statistics of Canada, 1952 (British Columbia), 7 p., printed, French and English, 25 Canadian cents. Department of Trade and Commerce, Dominion Bureau of Statistics, Ottawa, Canada. Consists of tables giving the production and landed and marketed values of the principal species of fish and shellfish landed in British Columbia in 1950-52; quantity and value of manufactured fishery products for 1951-52; canned salmon pack by areas and species for 1951-52; canned salmon pack by species for 1943-52; capital equipment in the primary fisheries operations; and the number of fishermen engaged in the fisheries for 1951-52.

(Canada) Fisheries Statistics of Canada, 1951 (British Columbia), 8 p., printed, French and English, 25 Canadian cents. Department of Trade and Commerce, Dominion Bureau of Statistics, Ottawa, Canada. Consists of tables giving the production and landed and marketed values of the principal species of fish and shellfish landed in British Columbia in 1949-51;

quantity and value of manufactured fishery products for 1950-51; canned salmon pack by areas and species for 1950-51; canned salmon pack by species for 1942-51; capital equipment in the primary fisheries operations, and the number of persons engaged in the fisheries for 1950-51.

(Canada) Fisheries Statistics of Canada, 1952 (Prince Edward Island), 4 p., printed, French and English, 25 Canadian cents. Department of Trade and Commerce, Dominion Bureau of Statistics, Ottawa, Canada. Consists of tables giving the production and landed and marketed values of the principal species of fish and shellfish landed in Prince Edward Island in 1950-52; quantity and value of manufactured fishery products for 1951-52; capital equipment in the primary fisheries operations; the number of fishermen engaged in the fisheries; and the vessels used in the sea fisheries.

(Canada) Fisheries Statistics of Canada, 1951, (Quebec), 6 p., printed, French and English, 25 Canadian cents. Department of Trade and Commerce, Dominion Bureau of Statistics, Ottawa, Canada. Consists of tables giving the production and landed and marketed values of the principal species of fish and shellfish landed in Quebec in 1949-51; quantity and value of manufactured fishery products for 1950-51; vessels used in the sea fisheries; capital equipment in the primary fisheries operations; and the number of persons engaged in the fisheries.

(Canada) Fisheries Statistics of Canada, 1951 (Ontario, Prairie Provinces and Northwest Territories), 8 p., printed, French and English, 25 Canadian cents. Department of Trade and Commerce, Dominion Bureau of Statistics, Ottawa, Canada. Consists of tables giving the production and landed and marketed values of the principal species of inland fish landed in Ontario in 1949-51; capital equipment in the primary fisheries operations; and the number of persons engaged in the fisheries. Similar data are also given for the Prairie Provinces (Manitoba, Saskatchewan, and Alberta) and the Northwest Territories.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE AGENCIES ISSUING THEM.

"Danish Seining," by Alan Glanville, article, *FAO Fisheries Bulletin*, vol. 6, no. 3 (May-June 1953), pp. 63-87, illus., printed, single copy 30 cents. Food and Agriculture Organization of the United Nations, Rome, Italy. (For sale by International Documents Service, Columbia University Press, New York 27, N. Y.) A comprehensive, well illustrated report on the history, methods of operation, and use, advantages, and disadvantages of Danish seining. This method of fishing was invented in Denmark in 1848 by a fisherman named Jans Vaever. By the turn of the century it had proven so effective that it was in use by large sea-going vessels in the North Sea and adjacent waters, spreading to England and Scotland in the 1920's. It was subsequently introduced into Ireland, Australia, New Zealand, and Newfoundland. Japan also uses a type of Danish Seine. Now ranking as one of the most important types of fishing in Europe, the method involves the use of two long ropes and a net which are used to surround a large area of sea bottom and handled so that when the ropes are pulled in to the vessel the enclosed area is reduced in size and the fish therein are driven to the center and finally into the net. Advantages of Danish seining are: (1) a large area of bottom can be covered, (2) the method is very efficient, catching a high percentage of bottom fish in the area, (3) the quality of the catch is excellent because the fish are in the net only a short time and are landed alive, and (4) since the winch does all the work, power requirement is very low in relation to the quantity of fish caught. Disadvantages are: (1) the bottom must be smooth and clear of all obstructions, (2) operations cannot be conducted in strong tides, (3) much rope is used up, and expenses for this item are high, and (4) the method is very tiring and requires a high degree of skill among the crew. There are two methods of Danish seining, anchor fishing and fly dragging. The former, widely used by Scandinavian fishermen and some English crews, involves anchoring of the vessel while hauling. In fly dragging, used by all the Scottish vessels and to some degree by the English and Irish, the vessel steams ahead while the gear is being taken in on the winch. Both these methods have advantages on certain grounds and for certain species of fish. More ground is covered in fly dragging and it is more effective for round fish. However, it is less effective for plaice, and the fuel costs are naturally higher than in anchor fishing. In closing, the author advises beginners not to become discouraged if large catches are not made on the first few tries with the Danish seine as it takes time to learn and will bring good results as experience is gained.

--D. E. Powell

"The Fisheries of the Gaspé Peninsula," article, *Trade News*, June 1953, vol. 5, no. 12, pp. 3-4, illus., processed. Department of Fisheries, Ottawa, Canada. A brief history of the fisheries of the Gaspé Peninsula. Describes the development of the fisheries which have been exploited for at least four centuries.

FISHERY SCIENCE: Its Methods and Applications by George A. Rounsefell and W. Harry Everhart, 456 p., illus., printed, \$7.50. John Wiley & Sons, New York, 1953. Rounsefell and Everhart have produced a first--the first successful attempt to present a textbook with a claim to comprehensive treatment of what might better be called the science of fishery management. "The real purpose," the authors say in the Preface, "is to present the problems that confront the administrator, the research worker, and the student, and to show how to go about solving them."

Oddly enough, Part XI-Problems, comprised of Chapter 25, is the last section of the book. In it seven major categories of problems are presented; abundance predictions, natural balance, environmental measurements, genetics, role of nutrients, estuarine ecology, and inter-specific relations--all cited as fields in which knowledge is notably deficient. Yet in all the preceding 24 chapters, devoted chiefly to an explanation of methods of solving problems, the standard problems facing research worker and administrator are forcefully indicated and not always solved.

"Fishery management," say the authors, "is the application of scientific knowledge concerning fish populations to the problem of obtaining the maximum production of fishery products, whether stated in tons of factory material or in hours of angling pleasure. This knowledge concerns the dynamics of fish populations, their environment, and their responses to variations in their environment, including exploitation by man." This is an extremely broad field and the attempt to include even a synoptic treatment of the many topics in 25 chapters has necessitated a rigid selection of only the most significant.

The authors quite justifiably "offer no apologies for omissions" and the reviewer has no criticism of those topics selected for inclusion, but the brevity imposed by space has invited the charge of superficial treatment of some subjects which have suffered by too great condensation. Part II, Natural Populations, comprised of 5 chapters totaling 84 pages, suffers from this difficulty. A study of populations and their fluctuations, population dynamics, is a quantitative science requiring a fairly advanced grade of mathematical treatment. For the average biologist the illustration and explanation of methods for separating and identifying populations, measuring the effects of exploitation, or estimating population size will be quite unintelligible unless he has had considerable training in statistics. If the authors had not assumed so much knowledge on the part of the reader and had shown a little more tolerance of ignorance, a little more sympathy with the beginner, they would have made a complex subject more understandable and thus would have encouraged both fresh-water and marine fishery investigators to master and use these valuable tools of research.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE AGENCIES ISSUING THEM.

The following parts of the book, III-Fish Ponds, IV-Fishing Gear, V-Protection Against Hazards, VI-Improvement of Habitat, and VII-Tagging of Fish are simple, straightforward, highly readable, descriptive accounts of a large segment of equipment and practices concerned with fisheries. In most of the chapters, brevity is again the chief fault, although the gadgetry of fish tagging seems to be unduly emphasized by detail in Chapter 16.

Part VIII, on age and growth, exhibits an abrupt change in pace. Chapter 18, How to Determine Age, is condensed but adequate, but Chapter 19, Growth, bogs down in mathematical formulae, and in confused and confusing physiological explanations. The authors could hardly expect to elucidate autocatalytic concepts of growth in the 26 lines devoted to that topic.

The remaining sections march on with an assurance and charm that is most pleasing. The chapter on fishery statistics is purely descriptive of a subject very familiar to the senior author and the chapter on stream and lake surveys obviously is home ground for the junior author. It is clear, detailed, and practical. The chapter on management techniques is good but too short, a comment which applies equally to the following one on artificial propagation as a tool of management.

The penultimate chapter, however, appeals to the reviewer as the cream of the lot. The authors present a discussion of fishery regulations and their effects, a subject which for some strange reason has had little attention from competent scientists. It is straightforward, thoughtful, sound, frank, courageous, and stimulating. Both scientists and administrators should study it.

Nearly every chapter includes a list of literature cited in the text, which should be studied by the serious student. The appendix contains a glossary and a helpful list of organizations and the journals they publish in the fishery field "to aid students and others in library browsing." There is an index. The illustrations are well produced and well selected (although it is odd to see a "blueback trout" among the characteristic game fishes in the single colored plate presented), and the publishers used good paper and good type in executing a good job of bookmaking.

In their first attempt, Rounsefell and Everhart have set a high standard in textbook writing for a field in which a unified account of the science was badly needed. The book should prove most useful in class instruction for upper division college courses and stimulating and helpful for conservation workers generally.

--Elmer Higgins

(FAO) List of Films--Fisheries and Related Subjects, by Mogens Jul and Dolores Fenn, 59 p., processed. Food and Agriculture Organization of the United Nations, Rome, Italy, 1953. The Food and Agriculture Organization is interested

in promoting the use of films related to the field of fisheries which could assist in stimulating increased consumption of fishery products and in exchanging international knowledge about fishing methods and gear and fish processing. This list gives the titles of films, and a description and synopsis of each film. The addresses of the distributors of the films are also listed.

(FOA) Monthly Report of the Foreign Operations Administration to the Public Advisory Board (Data as of June 30, 1953), 77 p., illus., processed. Division of Statistics and Reports, Foreign Operations Administration, Washington 25, D. C. This issue, which contains data through June 30, 1953, summarizes the activities of the Mutual Security Agency, predecessor agency to Foreign Operations Administration. Charts and appendix tables on the European Program cover MSA/ECA operations beginning with April 3, 1948. Charts and appendix tables on the Far East Program cover MSA/ECA operations under the China Area Aid Act of 1950. A section of the report deals with defense support for Western Europe.

(FAO) Second World Food Survey, 66 p., illus., printed, 50 U. S. cents. Food and Agriculture Organization of the United Nations, Rome, Italy, November 1952. A report on the progress made by the world in producing the needed food supply, viewed in the light of changes that have occurred in the postwar period. The chapter on the problems, possibilities, and ways by which food production can be substantially increased includes a brief discussion on the desirability of increasing fish production. Also gives data on the national average food supplies (including fish) available for human consumption (estimated by the Food Balance Sheet method) for the prewar period, a recent postwar period, and the goal for 1960. Discussions include production, trade, consumption, and nutrition; and food consumption targets for 1960.

Observations on the Development and Systematics of the Fishes of the Genus COILIA Gray, by S. Jones and P. M. G. Menon, 20 p., illus., printed. (Reprinted from Journal of the Zoological Society of India, vol. 4, no. 1, pp. 17-36, June 1952). Central Inland Fisheries Research Station, Barrackpore, Via: Calcutta, India. The larval development of Coilia reynaldi Val. and C. dussumieri Val., and an early larva of Coilia sp. are described and illustrated.

TRADE LIST

The Commercial Intelligence Branch, Office of International Trade, U. S. Department of Commerce, has published the following mimeographed trade list. Copies of this list may be obtained by firms in the United States from that Office or from Department of Commerce field offices at \$1.00 per list:

Canneries - Venezuela, 3 p. (Sept. 1953).

Includes canneries handling fishery products. Names and addresses of canneries are given. The types of products packed are listed, and the size and production capacity of each firm is indicated.

CONTENTS CONTINUED

	PAGE		PAGE
FOREIGN (CONTD.):		FOREIGN (CONTD.):	
CANADA (CONTD.):		SPAIN (CONTD.):	
B. C. SALMON CANNERS NEGOTIATING FOR		FISH CANNING TRENDS IN VIGO DISTRICT,	
LARGE SALE TO BRITAIN	37	SEPTEMBER 1953	45
DENMARK:		UNITED KINGDOM:	
FISHERIES TO EXPAND	37	MOBILE FISH-MEAL PLANTS IN SCOTLAND ...	45
GREECE:		GREENLAND COAST SURVEY FOR NEW TRAWLING	
SPONGE CULTURE METHOD	38	GROUNDS	45
SPONGE-FISHING AGREEMENT WITH LIBYA ...	38	FEDERAL ACTIONS:	47
GREENLAND:		CIVIL SERVICE COMMISSION:	
FISHERIES PRODUCTION, JANUARY-NOVEMBER		FISHERY BIOLOGIST EXAMINATION ANNOUNCED	47
1952	38	DEPARTMENT OF THE INTERIOR:	
JAPAN:		REGULATIONS FOR GEOLOGICAL AND GEOPHYS-	
1953 TUNA EXPORT QUOTA TO U. S.	39	ICAL EXPLORATIONS IN OUTER CONTINENTAL	
TUNA CANNERS DISCUSS POLICY ON EXPORTS		SHELF	47
TO THE U. S.	39	DEPARTMENT OF STATE:	
RESEARCH AGENT REPORTS GOOD PROSPECTS		U. S. SUPPORTS JAPAN'S APPLICATION FOR	
FOR EXPORTS OF FROZEN TUNA TO CANADA .	39	PROVISIONAL ASSOCIATION WITH GATT	47
VINYL FIBER TUNA SEINE NET PROVES SUC-		EIGHTH SESSION OF CONTRACTING PARTIES	
CESSFUL	40	TO GATT	48
MEXICO:		FISHERY INDICATORS:	50
GOOD SEASON PREDICTED FOR SINALOA		CHART 1 - FISHERY LANDINGS FOR SELECTED	
SHRIMP FISHERY	41	STATES	50
MOZAMBIQUE:		CHART 2 - LANDINGS FOR SELECTED FISHER-	
CANNED FISHERY PRODUCTS IMPORTS, 1952 .	41	IES	51
NORWAY:		CHART 3 - COLD-STORAGE HOLDINGS AND	
FISHERY PRODUCTS EXPORTS TO U. S.,		FREEZINGS OF FISHERY PRODUCTS	52
JANUARY-MARCH 1953	42	CHART 4 - RECEIPTS AND COLD-STORAGE	
EXPORT MARKET OUTLOOK FOR FISHERY PROD-		HOLDINGS OF FISHERY PRODUCTS AT PRIN-	
UCTS	42	CIPAL DISTRIBUTION CENTERS	53
HAND-LINE FISHING WITH LIGHT DEVELOPED		CHART 5 - FISH MEAL AND OIL PRODUCTION,	
WATERTIGHT PLYWOOD BARREL	43	UNITED STATES AND ALASKA	53
DEHYDRATED WHALE MEAT	43	CHART 6 - CANNED PACKS OF SELECTED FISH-	
SEYCHELLES:		ERY PRODUCTS	54
SURVEY REVEALS RICH FISHING GROUNDS IN		CHART 7 - U. S. FISHERY PRODUCTS IMPORTS	55
INDIAN OCEAN	44	RECENT FISHERY PUBLICATIONS:	56
SPAIN:		FISH AND WILDLIFE SERVICE PUBLICATIONS .	56
LARGE FREEZER AND STORAGE PLANT BUILT .	44	MISCELLANEOUS PUBLICATIONS	58



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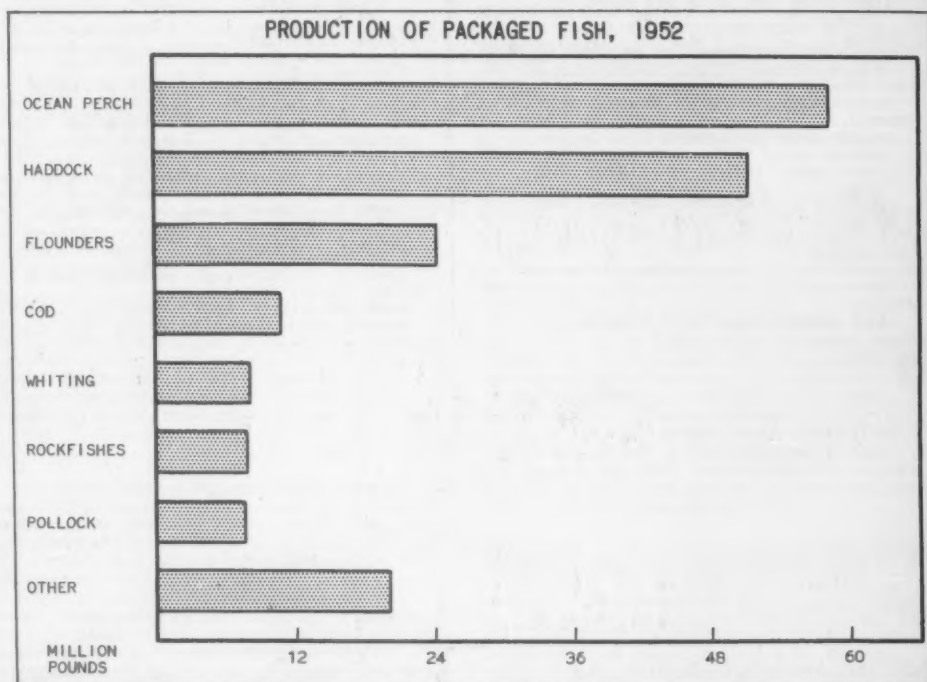
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Pp. 1-11--Staff of Fishery Technological Laboratory, U. S.
Fish and Wildlife Service, Boston, Mass.;
p. 24--G. T. Sundstrom.

PACKAGED FISH, 1952

Packaged Fish, 1952, C.F.S. No. 863, an annual summary, was recently issued by the Service's Branch of Commercial Fisheries. This 3-page bulletin contains data on the production of packaged fish (fresh and frozen fillets, steaks, and split "butterfly") for 1952. Quantity and value are shown. Data are presented by species, by method of preparation, and by major areas. A summary of the production of fresh and frozen groundfish (including ocean perch) fillets by species from 1939 to 1952 and imports of groundfish (including ocean perch) fillets from 1940 to 1952 are included. An added feature is the 1951 and 1952 production of consumer-size packages of certain frozen fishery products.

The production of fresh and frozen packaged fish (fillets, steaks, and split "butterfly") in continental United States during 1952 totaled 190,374,040 pounds,



valued at \$54,912,172 to the processors. This was a decrease of 7 percent in quantity and 8 percent in value, compared with 1951. The principal items produced were ocean perch fillets, 58,660,499 pounds (value \$14,181,952), and haddock fillets, 52,064,681 pounds (value \$15,386,569).

The total production of groundfish (cod, cusk, haddock, hake, pollock, and ocean perch) fillets in 1952 amounted to 132,641,779 pounds valued at \$34,266,475. Imports of these fillets during the year amounted to 107,802,447 pounds.

It is estimated that 567,000,000 pounds of round fish were required to produce the 190,374,040-pound output of packaged fish in 1952.

Copies of C.F.S. No. 863 are available free upon request from the Division of Information, U. S. Fish and Wildlife Service, Washington 25, D. C.

